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ORIGINAL ARTICLES.

SOME SURGICAL ASPECTS OF OBSTETRICS.¹

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Two articles in the *New York and Philadelphia Medical Journal*, one by Dr. R. L. Dickinson, entitled, "The Best Time for Repair of Lacerations of the Cervix," the other by Dr. G. H. Donohue, on "Primary Trachelorrhaphy," contain some excellent observations, particularly that of Dr. Donohue, as to the effects of cervical laceration upon uterine involution. So far as they emphasize the importance of early surgical treatment of parturient injuries they are of great value, but in setting as a definite time for such treatment only the few days immediately following labor, certain surgical principles are overlooked, for the best application of which a wider interpretation of the facts is necessary.

The constant occurrence of cervical lacerations, even in apparently normal labors, is, of course, well known, although on account of our present aseptic technic they are less constantly of clinical importance than heretofore. The less frequent appearance during the past few years of the extremely indurated and eroded cervix is a fact noted by so experienced an observer as Dr. T. A. Emmet.

Injuries to the cervix, however, of such severe character as to cause immediate and subsequent symptoms are of very constant occurrence under the following circumstances: (1) Premature rupture of the membranes. (2) Application of the forceps and all operations requiring rapid dilatation of the cervix. (3) Meddlesome attempts to hasten the dilatation manually in normal cases.

1. *Premature Rupture of the Membranes.*—The cervix is always torn more in cases of dry labor, and in such cases it is the duty of the attendant to see how much of an injury has resulted.

2. *Application of the Forceps and Other Obstetrical Operations.*—The forceps is applied in a very large number of cases before dilatation is completed. A common expression that the rim of the cervix can be felt, but that it is soft and dilatable, means that the cervix will be deeply lacerated. After versions and in all cases where the cervix must be dilated rapidly the same injuries constantly result without regard to the operator. Manual dilatation is a misnomer; manual tearing is a more correct expression of the actual result.

3. *Meddlesome Attempts to Hasten the Dilatation of a Cervix*, perhaps already thin and soft, frequently transforms it into a thick and resistant circle which not only delays the labor but makes a deep laceration certain to occur.

Preventive treatment must be based upon an appreciation of these facts. Treatment of the injuries after their occurrence should be regarded from the same points of view as wounds in any other portion of the body, namely—hemorrhage, sepsis, disturbance of functions and subsequent disease.

Hemorrhage from cervical wounds is generally considered as of comparatively rare occurrence, but the writer's own observations have taught him that hemorrhage from this source, after labor is completed, is more frequent than from any other portion of the genital tract. One need but hold the fundus of a well-contracted uterus in a dozen operative cases and closely observe the amount of bleeding to appreciate this fact. The bleeding from the torn cervix in placenta previa frequently precipitates a fatal result. The two common obstetric procedures—douches and iodoform gauze packing—are of little value. In fact, I believe the cervical wound is often kept open and the hemorrhage is worse than it otherwise would be. Dr. Dickinson gives as one of his reasons for not suturing the cervix at the end of delivery the obscuring of the operative field by the blood. The surgeon usually considers bleeding an important reason for closing a wound.

Sepsis.—It is generally recognized in surgery that one of the best ways of preventing infection of wounds is to suture them. The cervical wound is a very frequent source of infection as may be learned by a careful local examination of septic women. If not fatal, such an infection almost always results in the hard and eroded cervix as seen by the gynecologist.

Disturbance of function from these injuries is often shown by subsequent sterility and menstrual difficulties. Subsequent disease—subinvolution—metro-endometritis, etc., are well known. If the uterus without the presence of fever involutes insufficiently during the puerperium it is due in a very large proportion of cases to a cervical injury to which injuries of the perineum are ordinarily second in importance.

Why, then, should such injuries not be treated surgically as often as are the perineal wounds?

Dr. Dickinson says "the conditions for repair of the torn cervix immediately after delivery are as wrong as they can be, because (1) it is swollen, distorted and stretched beyond recognition; (2) because bleeding obscures the work; (3) because deliberation and due care are impossible." He would limit such work to those cases in which

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the injury causes severe bleeding. The cervix, of course, is swollen, but to say that it is distorted and stretched beyond recognition expresses the condition in exceptional instances. He refers also to Webster for support to this statement, but Webster in his own description of a plate made from the uterus shortly after death simply expresses the difficulty of recognizing in his specimen the relations of the internal and external os. That, however, is not the same as looking at a cervix which has been pulled down to the vaginal entrance by volsellum forceps. Dr. Dickinson's third objection in regard to the impossibility of deliberation and due care at the termination of delivery hits at a fundamental error in obstetric practice. He says "of course, one prefers, personally, to clean up all the mess and have done when he has done at the end of labor." A carefully planned operation in gynecology would hardly be described as a "mess," and if the conduct of labor, especially if its course is abnormal and requires operative interference, were carried out on the same lines as other operations "messes" would be less frequent.

One of the commonest errors in obstetric technic is the attempt to do the impossible on a bed, and a more frequent resort to a hard table with more deliberation at the beginning of an obstetric operation will often determine its successful result. The cervix, then, as well as the perineum is best sutured at the completion of the delivery. No particular operation, device or instrument is necessary. It is simply a question of proper exposure of the wound by means of volsellum forceps, sponging, and two, three or four plain catgut stitches. That such wounds can be successfully sutured a day or two later only makes a greater demand upon the attendant, and fortunately allows him time, if necessary, to procure sufficient aid for a successful operation. If a longer delay is necessary they can be treated in a few days, weeks, or even months, but the sooner the better.

The writer, from his own experience, is thoroughly impressed with the excellent results to be obtained from the early treatment of these injuries compared with those usually obtained months and years afterward, when connective tissue changes of more or less permanent nature have occurred. As sepsis in delivery has reduced the morbidity and mortality of the puerperium, so surgery, displacing the hot douche and gauze packing in the puerperium, will still further decrease the number of chronic pelvic diseases.

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Annali dell' Istituto Maragliano.—This is the title of a new periodical, just received, to be devoted entirely to the study of tuberculosis and to set forth the results obtained by Maragliano and his pupils in the recently established institute founded for such work at Genoa.

MYELOGENOUS LEUCEMIA WITH DISAPPEARANCE OF THE SPLENOMEGALY AND THE MYELOCYTES.¹

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CASES of myelogenous leukemia, in which, together with an improvement in the patient's general condition, there is a disappearance of the splenic tumor and at the same time of the myelocytes, are apparently very rare. The only instances recorded in the literature, so far as we have been able to ascertain, are those of McCrae, Senn, Plehn and possibly also one of Kohn.

McCrae's patient was a man, twenty-eight years old in whom symptoms attributable to a leukemia were first observed in the latter part of 1897. The following June the spleen was found to be much enlarged, coming within $2\frac{1}{2}$ inches of the umbilicus. Blood examination at that time showed 45 per cent. of Hb., 2,680,000 red cells and 584,000 leucocytes; of the latter 0.3 per cent. were small mononuclears, 0.6 per cent. large mononuclears and transition forms, 72.0 per cent. polynuclear neutrophils; 3.0 per cent. eosinophiles and 23.0 per cent. myelocytes. During the count of 600 cells six normoblasts were seen.

The patient was placed on arsenic and general hygienic treatment. The following September the spleen could just be felt on deep inspiration. Blood examination then showed 68 per cent. of Hb. and 4,640,000 red cells, while the leucocytes only numbered 9,250; of these 10 per cent. were small mononuclears, four per cent. large mononuclears and transition forms, 84 per cent. polynuclear neutrophils and two per cent. eosinophiles. Myelocytes and nucleated red cells were not found.

In November the spleen could be palpated 2.5 cm. below the costal margin. The percentage of Hb. was 67; the red corpuscles numbered 4,160,000, and the leucocytes had risen to 178,000. A relative count showed 2 per cent. of mononuclear leucocytes, 67 per cent. of polynuclear neutrophils, 9 per cent. doubtful forms (classed by McCrae with the polynuclears), 1 per cent. each of eosinophiles and mast cells, and 20 per cent. of myelocytes. Nucleated red cells had again appeared; 12 normoblasts and 6 intermediate forms between normoblasts and megaloblasts were encountered during a count of 1,000 cells.

By December the spleen had again diminished in size; on the tenth it was found just palpable on deep inspiration. The leucocytes had fallen to 98,000, of which only 8 per cent. were myelocytes. The following April the spleen could not be felt even on the deepest inspiration. The Hb. was 70 per cent.; the red corpuscles numbered 5,328,000 and the leucocytes 5,000. A differential count showed 13 per cent. of small mononuclears;

¹ Presented before the Johns Hopkins Hospital Medical Society, February 1, 1904.

² Received for publication March 21, 1904.

16 per cent. of large mononuclears; 66 per cent. of polynuclear neutrophils and 2.0 per cent. of eosinophiles." Myelocytes were not found and nucleated red cells also were absent.

The subsequent history of McCrae's patient is unfortunately not known, beyond the fact that he died suddenly several months later in California, from what his physician regarded as an attack of cerebral hemorrhage.

To summarize, we have here an undoubted case of myelogenous leucemia in whom twice within less than twelve months the classical features of the disease, viz., splenomegaly and myelemia, could be demonstrated and then disappeared. At neither intermission was there any evidence of an intercurrent disease, to account for the improvement.

Senn's case occurred in a woman, aged twenty-nine years. In the early part of the winter of 1902 she first became conscious of increasing weakness and three months later discovered that her abdomen had become greatly enlarged. On admission to Senn's service, January 1, 1903, she was somewhat emaciated and profoundly anemic. The spleen extended nearly to the pubes below and two inches beyond the median line on a level with the umbilicus. Blood examination on February 3 showed 56 per cent. of Hb.; 3,500,000 red cells and 64,800 leucocytes. A differential count is not given. Senn speaks of myelocytes and numerous eosinophiles and also mentions that poikilocytosis was very pronounced.

Following a three weeks' course of iron and Fowler's solution without noticeable improvement, X-ray treatment was instituted on February 3 and continued daily with occasional intermissions until about the middle of June. The spleen presented indications of progressive decrease in its size about three weeks after the beginning of the X-ray treatment, and it was noticed that improvement of the blood condition kept pace with the reduction in the volume of the spleen. During this time high temperatures were observed besides "other symptoms of intoxication." On April 12 the examination of the blood showed no myelocytes and only a very few eosinophiles and very little poikilocytosis; at the last examination which was apparently made in June there were "no abnormalities in the structure and relative number of the red corpuscles and leucocytes."

Senn regards his patient as cured and attributes the result entirely to the prolonged use of the X-ray treatment.

Plehn's case was a male, aged forty years. The patient's complaints began with pains in the left leg on October 20, which rapidly increased in severity and led to his admission to the hospital on October 30. There was then marked tenderness of the patella and the tibia, ascites, hepatic enlargement, icterus, splenomegaly to within two finger breadths of the umbilicus and below this a retroperitoneal hematoma (of splenic origin), slight enlargement of the inguinal and cervical glands, moderate albuminuria and evidence of

retinal hemorrhages. The condition of the blood showed a mixed cell leucemia. There was 35 per cent. of Hb.; the red cells numbered 2,180,000 and the leucocytes 90,000, with many neutrophilic myelocytes.

By November 14 the disease had progressed. The spleen extended almost to the umbilicus; new retinal hemorrhages had occurred; the red cells had fallen to 1,600,000 and the leucocytes had increased to 149,000. One third of the latter were myelocytes. From this period there was rapid improvement. On December 8 the albuminuria, the ascites and the hematoma had completely disappeared; the spleen only extended three finger breadths beyond the costal margin. The Hb. was 54; the red cells numbered 3,092,000 and the leucocytes had dropped to 4,600. By the 31st of the same month the spleen could be felt a finger-breadth below the costal border; the Hb. had risen to 60 per cent., the red cells to 3,500,000, while the leucocytes had further diminished to 3,000. This was essentially the condition of the patient at the time of Plehn's report (January 6). The myelocytes had not completely disappeared, but were much diminished—about one to a specimen. Noteworthy is the fact that while the myelocytes represented about one third of the total number of the leucocytes at the height of the disease, the blood gradually assumed somewhat of a lymphatic character, and at the time of the report the mononuclear non-granular elements (comprising both lymphocytes and large mononuclear leucocytes) were present in the ratio of about 45:54.

To sum up, we find that in Plehn's case there had been a drop in the number of the leucocytes from 149,000 to 3,000 in about seven weeks, and that coincidentally the splenomegaly had very much diminished. Strictly normal relations had not been established and Plehn himself does not regard his patient as cured; he looks upon the relative lymphocytosis as evidence of a pseudo-leucemia (Ehrlich). The treatment in this case consisted in the hypodermic use of arsenic. Plehn does not refer the manifest improvement in the condition of his patient to its use, however, and suggests the possibility that this may have been dependent upon the resorption of the hematoma.

In the discussion which followed Plehn's report in the Berliner medizinische Gesellschaft, Kohn mentioned two cases of leucemia, which came under his observation and in which an apparent cure had resulted. The data furnished, however, were very meager:

One case occurred in a child, aged three years. The condition here was apparently an acute leucemia (a high grade of anemia and prostration; fever; numerous petechiæ; hemorrhages from the gums, nose and intestines; gingivitis; splenic tumor, enlargement of the liver; slight enlargement of the lymph glands and a high grade of hyperleucocytosis referable to lymphocytes). The condition appears to have been quite desperate, notwithstanding the use of arsenic. This was then discontinued and after a few weeks the child

appeared to be perfectly well again, barring "a certain disproportion of the various forms of leucocytes." The improvement continued for two months. Gradually the liver and spleen became enlarged a second time, the blood condition again became worse, another attack of acute leucemia developed, and the child died.

In the second case the data are too meager to draw any conclusions regarding the condition of the spleen and the blood. The disease had apparently lasted with periods of improvement, interspersed with occasional exacerbations, for ten or eleven years.

Senator further remarks that he has seen remissions in the course of a leucemia which could not be referred to intercurrent disease. He only cites a case of lymphatic leucemia, however, in which the blood was apparently normal, but in which there still existed a moderate enlargement of the spleen. Cases of this order, however, do not enter into consideration in the present instance, as we have reference only to cases of myelogenous leucemia in which, together with an improvement in the patient's general condition, both the splenomegaly and the myelocytes have disappeared. An improvement of either factor alone, irrespective of any intercurrent malady has been repeatedly observed, and to this class of cases the instance cited by Senator and possibly also Kohn's second case belong. There accordingly only remain the three cases of McCrae, Senn and Plehn and the first case of Kohn.¹

To this small list we can add a further case, wherein both the splenomegaly and myelocythemia disappeared and in which the patient's improvement has now lasted nearly a year.

Mrs. M. S., aged thirty-five years. The patient's family history contains nothing of interest. As a child she had mumps, diphtheria, whooping-cough and malaria; at eighteen measles and at twenty-one pneumonia. Menstruation began at thirteen. She was married twice, the first time at fifteen. From the first marriage she had two children and one miscarriage; from the second two miscarriages. Her general health had been good until 1899. Following a good deal of worry she then lost her appetite and slept badly, but definite symptoms of actual sickness did not appear until two years later, in 1901. She then noticed a bulging from below the ribs on the left side, which gradually increased and extended to the left groin. Coincidentally, her dyspeptic symptoms became more troublesome, she suffered from palpitations of the heart on slight exertion, from headaches and also experienced pain below the ribs on the left side, between the shoulder blades and in the legs, which were sufficiently intense to interfere with her sleep. She gradually grew weaker and lost flesh.

The splenic tumor was discovered by a physician in March, 1903, and she was sent to a hos-

pital, where the diagnosis of splenomyelogenous leucemia was made. Her red cells then numbered 1,700,000 and the leucocytes 350,000. She was kept in bed for four weeks and given Fowler's solution in increasing doses.

On April 12, when the patient was first seen by Dr. Simon, she weighed 140 pounds (usual weight 167). She then complained of numbness in her toes and fingers, and had difficulty in fastening her clothes. She looked moderately anemic. The spleen extended almost to the umbilicus and well below the costal border in the nipple line. The liver was not palpable. There was no enlargement of the superficial lymph glands. At the apex there was a soft blowing systolic murmur, scarcely audible at the base, and not transmitted to the axilla; the area of cardiac dulness was not increased.

A blood examination at this time showed 54 per cent. of hemoglobin, 1,760,000 red cells and 4,000 leucocytes. Of these 21.7 per cent. were small mononuclears; 2.7 large mononuclears; 51.6 polynuclear neutrophils; 6.7 polynuclear eosinophils; 10.8 mast cells; 5.9 neutrophilic myelocytes and 0.2 per cent. eosinophilic myelocytes. While counting 368 leucocytes, 23 normoblasts and two megaloblasts were seen. Noteworthy was a marked grade of anisocytosis and poikilocytosis, and polychromatophilia also was quite pronounced. Granule cells (red) were present in small numbers.

The patient had been taking eight drops of Fowler's solution three times daily and was instructed to increase the dose.

She was again examined on April 28. She had increased the arsenic to 19 drops three times daily without any untoward effects. Her physical condition was unchanged. The Hb., however, had risen to 67 per cent., and the red cells to 3,400,000. The leucocytes numbered 5,000. A differential count showed 13 per cent. of small mononuclears; 9.3 per cent. of large mononuclears; 60.5 polynuclear neutrophils; 3.9 polynuclear eosinophils; 8.5 mast cells; 3.9 neutrophilic myelocytes and 0.5 eosinophilic myelocytes. The nucleated red cells had diminished; only four normoblasts and one megaloblast were seen while counting 352 leucocytes. The plaques seemed much increased. Otherwise the blood condition appeared unchanged.

The next note was made on May 5. The patient had increased her arsenic to 22 drops three times daily, and appeared to be much improved. The physical condition, however, was unchanged. Her weight had increased five pounds and a half since April 12. The Hb. was 68; the red cells numbered 2,112,000 and the leucocytes only 2080. Poikilocytosis was still very pronounced; there were many microcytes, but no tendency to over-size. Granule cells were present in fair numbers. The plaques still appeared increased. While counting 381 leucocytes, only two normoblasts and two megaloblasts were seen. The differential count showed 23.0 per cent. of small mononuclears.

¹ This latter being an acute lymphatic leucemia, with splenomegaly and with slight involvement of the lymph glands only, can probably be regarded as of myelogenous origin and is accordingly included in our list.

clears; 6.3 large mononuclears, 49.8 polynuclear neutrophiles; 7.1 polynuclear eosinophiles; 10.9 mast cells; 1.9 neutrophilic myelocytes and 0.7 eosinophilic myelocytes.

On May 14 the spleen was found much reduced in size; it could just be palpated at the costal border. Her Hb. had risen to 75 per cent.

During the summer months the patient was not seen. On October 22, when the next note was made, she stated that she had suffered a great deal of pain along the region of the attachment of the diaphragm, and had had an attack of pleurisy, of which nothing definite, however, could be learned. She had taken Fowler's solution with brief intermissions during the entire summer, and had gotten as high as twenty-six drops three times daily. At times she had been very much puffed. Quite recently she had been examined for life insurance and passed. Her weight had increased to 151 pounds. The spleen was barely palpable on deep inspiration. Noteworthy was the marked brownish pigmentation of the abdomen (arsenical). The Hb. was 80; the red cells numbered 4,400,000 and the leucocytes 5,600. Of the latter 29.6 per cent. were small mononuclears, 2.2 per cent. large mononuclears; 55.5 per cent. polynuclear neutrophiles; 4.4 per cent. polynuclear eosinophiles; 5.9 per cent. mast cells; 2.2 per cent. neutrophilic myelocytes and 4.4 per cent. eosinophilic myelocytes.

On November 23 she was again seen. Her weight had increased to 156 pounds, a total gain of 16 pounds since April 12. The pigmentation of the abdomen remained unchanged. The spleen could scarcely be felt. The patient had been taking her arsenic quite regularly—up to 26 drops three times daily, but has had a good deal of digestive disturbance. There is still pain along the lower ribs on both sides. The Hb. was 75; the leucocytes numbered 5,000. Of these 19.8 per cent. were small mononuclears; 6.2 per cent. large mononuclears; 62.7 per cent. polynuclear neutrophiles; 1.8 per cent. polynuclear eosinophiles; 6.8 per cent. mast cells; 2.4 per cent. neutrophilic myelocytes.

December 16. The patient has still maintained her high doses of Fowler's solution—26 drops three times daily—with brief intermissions. There has been some nausea, which improved on withdrawal of the arsenic. The pain along the lower ribs and between the shoulders is frequently quite distressing. The spleen is scarcely to be felt. The leucocytes numbered 4,000.

On January 26 the patient's physical condition was still unchanged, but she is manifestly not standing her arsenic so well as formerly; with the higher doses, 20 to 26 drops three times daily, she has a good deal of nausea and has vomited on several occasions. The pain between the shoulders and along the lower ribs continues as before—at times better, at times worse.¹

Her headaches, from which she suffered quite

¹ The persistent character of this pain, while not uncommon in leucemia, led to a careful examination of the urine. The Bence Jones' albumin was absent.

frequently early in the course of the disease are much improved; she feels stronger in every respect and is no longer troubled by palpitation of the heart. Her weight is 152 pounds. She looks well and certainly does not make the impression of an invalid. The pigmentation of the abdomen is very marked, especially in the flanks; the elbows also are quite dark. The spleen can just be felt on deep inspiration; this is greatly facilitated by the relaxed condition of the abdominal walls and the wide costal angle without which the organ could probably not be palpated at all. The lymph glands are nowhere enlarged. The Hb. is 76 per cent.; the red cells number 3,984,000 and the leucocytes 4,500. There is still marked poikilocytosis and some anisocytosis. The small mononuclears were 34.0 per cent.; the large mononuclears 31 per cent.; the polynuclear eosinophiles 6.3 per cent.; and the mast cells 11.5 per cent. Myelocytes were not found in a count of 1,000 cells. Nucleated red corpuscles were also not encountered.

The last examination was made on March 8, i.e., just about one year from the time when the patient first went to the hospital. For the first three weeks following the last note she had taken no arsenic whatever; since then she has resumed her drops, but has not been able to get beyond ten drops three times daily; even this amount is not so well borne, but causes a great deal of nausea. She has gained three pounds, and looks quite well. The condition of the spleen is as above. The Hb. was 80; the red cells numbered 5,200,000 and the leucocytes 6,500. Of these 26.7 per cent. are small mononuclears; 14.4 per cent. large mononuclears; 51.5 per cent. polynuclear neutrophiles; 3.3 per cent. eosinophiles and 3.5 per cent. mast cells. An occasional myelocyte was encountered, but the number did not exceed 0.4 per cent. There are a few granule cells. The poikilocytosis is much improved.

To sum up, we have a patient in whom three years ago undoubted symptoms of a myelogenous leucemia developed. When the patient entered the hospital one year ago her spleen was greatly enlarged and the blood was absolutely characteristic of the disease, the leucocytes numbering 350,000. A month later they had fallen to 4,000; the myelocytes had diminished to 6.1 per cent. and there was nothing in the blood picture with the exception of the high percentage of mast cells (10.8) to suggest a leucemia. The spleen, however, was still quite large. Six weeks later this symptom also had nearly disappeared and ever since (now ten months) the spleen has been scarcely palpable. The patient's weight has increased; her Hb. has risen to over 75 per cent. and the red cells have increased correspondingly; the number of the leucocytes has been normal and even subnormal; and at no time since April 28, 1903, has the percentage of myelocytes been above 2.4; on January 26 indeed not one myelocyte was seen in a count of 1,000 cells. Significant, however, is the fact that the mast cells

have been constantly much above the maximum normal; they varied between 3.5 and 10.8 per cent. As is well known, Ehrlich has laid great stress upon this factor in the diagnosis of myelogenous leucemia, and there is indeed no other condition known in which a similar increase has been observed.

Senn and Plehn unfortunately have published no differential counts in their cases, and McCrae only gives one mast cell count, which was made during an active period of his patient's illness.

Upon the basis of the greatly increased percentage of mast cells we believe that even now, and without a knowledge of our patient's past history, the diagnosis of myelogenous leucemia would be justifiable. Notwithstanding the general improvement, the disappearance of the splenomegaly and the absence of myelocythemia, there can scarcely be any doubt that the arrest of the disease is merely temporary, if indeed there is arrest of the pathological process. Opposed to such an assumption is the fact that even now there is a certain degree of poikilocytosis, which is out of proportion to the degree of residual anemia. This feature has been quite remarkable ever since the patient first came under observation, and together with the occasional increase of the color index was strongly suggestive of a pernicious anemia. That the blood picture of leucemia may pass over into that of pernicious anemia has been observed. Gerhardt⁶ thus recorded a remarkable instance where the ratio of the leucocytes to the red cells had been 1:3; the leucocytes then rapidly diminished within three days, and the blood picture of the leucemia was replaced by that of a pernicious anemia. In our case there was lacking, however, that grade of granular degeneration of the red cells, which in pernicious anemia is so marked and so constant; besides, the small mononuclear leucocytes were not increased, while in pernicious anemia during the active stage of the process this is a very common event and to a certain extent characteristic. The significance of the increase of the mononuclear elements, which has been noticeable of late, can only be a matter of speculation.

As we have already stated, we do not in the least believe that our patient has recovered, nor do we think that Senn has adduced sufficient proof to warrant the conclusion that his patient was cured. This patient was dismissed from observation about the middle of June—3½ months approximately after the spleen first showed signs of diminution in size. Senn's article appeared on August 22. This interval is certainly too brief to warrant any fargoing conclusions, so far as the question of a cure is concerned. In the light of our own case, and that of Plehn, moreover, it scarcely seems justifiable to refer the improvement in the patient's condition to the use of the X-rays. Whether it would be admissible, on the other hand, to ascribe the improvement in our case and that of Plehn to the arsenic may similarly be questioned. The treatment in Kohn's case is not very clear, but it seems that the improvement

began when the arsenic was discontinued. We believe these cases merely show that both the splenomegaly and myelocythemia may temporarily disappear, together with an improvement of the patient's general condition, but the rapid recurrence in Kohn's first case and in McCrae's patient, and the death of both, throws grave doubts upon the propriety of viewing such improvements in the light of a cure.

Since the above notes were sent to the editor several additional examinations were made of the patient's blood, the last on the 23d of May. Her red cells then numbered 5,480,000 and the leucocytes 3789. There were 47 per cent. of mononuclear elements, 35 per cent. of polynuclear neutrophils, 6 per cent. of eosinophiles and 12 per cent. of mast cells. There were no myelocytes and the poikilocytosis and anisocytosis had almost entirely disappeared. The patient's general condition remained unchanged, and the spleen was not palpable even on deep inspiration. The improvement has thus continued for over a year.

In the literature three additional cases have been recorded, in which a symptomatic cure was apparently effected. The interval in these cases which has elapsed between the return to approximately normal conditions and the time of publication, however, is too brief to warrant any fargoing conclusions. The cases in question are those of Brown⁷, and Bryant and Crane⁸. In two of the three the improvement may have been referable to the X-ray treatment, which was employed, but in Bryant and Crane's second case arsenic only was used. It is interesting to note that in this case there was a hematoma of the right ankle, the result of an injury, which was incised on two occasions.

A fourth case of myelogenous leukaemia has further been reported by Grosh and Stone, in which, as the result of X-ray treatment apparently, there was a marked improvement in the condition of the blood, but in which the splenomegaly did not disappear. The number of the leucocytes in this case fell from 266,250 to 10,600 and the myelocytes from 52 to 2 per cent., while the patient's general condition also was improved. This patient rather suddenly, i.e., within a few days, began to fail in strength and died of general asthenia.

In reference to Senn's case finally I have a note written in April, according to which the patient then had a mild relapse.

S.

July 13, 1904.

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A VISIT TO GHEEL.

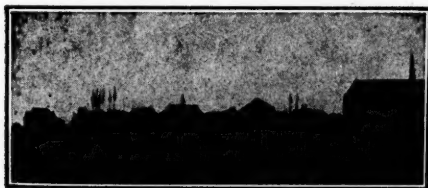
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To one who has been accustomed to approach the dwellings of the insane as one would a king's palace; to proceed through avenues and formal gates to an imposing edifice, and to be ushered in by attendants to the presence of the superintendent of an American hospital for the insane, it was something of a novelty to arrive on a local train in the late evening at the small station of Gheel, in Belgium, and to be suddenly set down in the dark in the midst of a colony of nearly 2,000 insane people who were living at large in any or perhaps all of the cottages that were faintly discernible in the dusk of the flat landscape.

No vehicle or porter and no sign of life was visible in the town, except a few lights in the village. A bowing acquaintance with scientific German and French is of but slight aid when one is twenty-five miles from the linguistic center of Antwerp. Flemish was the only tongue of the natives, but the presence of a valise and the ignorance of the language plainly indicated the necessity of a hotel, and we were soon being guided by a taciturn fellow through the one long, closely built street, to the only hotel of the village. Side by side, and level with the street, without doorstep or garden plot or outside walk, the low two-storied houses made an unbroken wall on either side of the street. Shuttered windows and the wide deserted street gave the impression, which was probably true, that at eight o'clock the business and social life of Gheel was at an end for the day.

Visitors for Dr. Peters, the Director of the

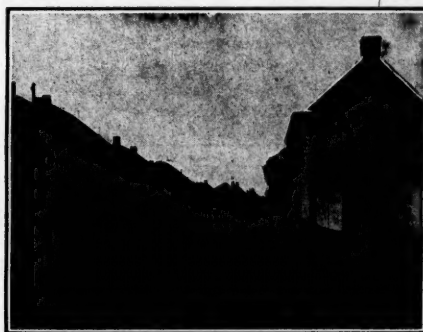


VIEW OF GHEEL. CHURCH OF ST. DYMPHNA.

Colony at Gheel, were evidently a proper source of revenue to the inn, and despite the extreme lateness of the hour our guide, whom we found was an epileptic, was bidden to take a note announcing our visit to Dr. Peters the next morning.

To obtain a carriage for the tour we wished to make seemed a proper courtesy, for we learned that there was no livery connected with the institution, and that the physicians and assistants made their visits over a space of nearly twenty square miles by bicycle, or by means of a local train, or on foot. No carriage was to be had, however, in Gheel, everything that horse could draw was in requisition for a pilgrimage to some shrine in a neighboring village. This reminded us that for

centuries Gheel had had a shrine to which pilgrims came to be cured. In the ninth century a young Flemish girl had been beheaded there by her father, who was enraged because she repulsed his amours. In the early days sufferers from all diseases came to be cured at her tomb, which gradually became famous as a resort for "those possessed of evil spirits." In fact, the actual origin of the system of boarding out patients which now constitutes the colony, was in part due



A STREET IN GHEEL.

to the fact that the pilgrims could not all be cared for by the church, and the inhabitants of the town offered their hospitality to the strangers until such time that their turn might come for the miracle to be invoked in their behalf.

For many hundred years the treatment of the insane at Gheel consisted only in prayers and penances and exorcisms; in the eighteenth century the colony became a recognized local institution; but it was not until 1851 that the State assumed control over it and regulated its affairs.

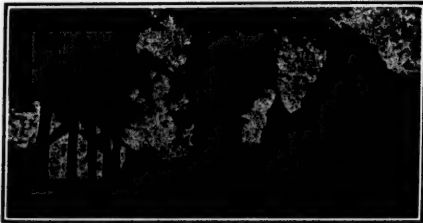
Since then the colony system for the care of the insane has been brought within the jurisdiction of the Minister of Justice, and is subject to the various laws which control all the institutions for the insane in the kingdom of Belgium.

By reason, however, of its slow growth, and the personal interest of its directors, a very interesting economic and social condition is presented by the existence of the colony. Had Gheel been organized on paper before the colony came into existence, it would have been laid out straight, plumbed and drained, and the cost of maintenance would have been greater to the State. As it is, it consists of a poor rural community, small farms, occupied by low one-story dwellings, tiny villages, with the town of Gheel at their center, and meadow lands traversed recently by local steam cars, run much on the principle of an American trolley.¹

The only imposing buildings in the town other than the Cathedral, which rises from the marketplace, are the administration buildings and infirmary of the Colony of Gheel. The double row of fine trees and the shrubbery and grass at

(See article by P. Masoin, "Care of the Insane in Belgium," *Journal of Nervous and Mental Disease*, August-September, 1904 (in press).)

the entrance lent dignity to the buildings which would have been considered small for administering a colony of this size in America. But within, the strictest economy of space was observed. The large, home-like living room of the superintendent, Dr. Peters, served as a reception room which led



AVENUE OF THE INFIRMARY. DIRECTOR'S OFFICE TO RIGHT.

immediately to plainly furnished business rooms and thence to the wards where a few sick patients were being cared for, and a small number of semi-private rooms where certain patients always lived. About sixty can be accommodated here, if for bodily or mental ailments they must be removed from the homes of their guardians.

The small garden in the immediate rear was brilliant with flowers, and rich in fruit, plums, grapes and pears hanging thick on low carefully trained trees and vines. The barred windows of the detention rooms, where newcomers spend their first few nights, or where violent cases are watched, looked out on a level with the garden; and on stepping from one part to another there was a sense of cosy compactness and consideration for the home comfort of every one dwelling within the grounds.

At the hour of nine, when we arrived, Dr. Peters, the Medical Director, who is at the same time chief of the administrative as well as the medical service, was busy receiving the reports of his assistants on their preceding day's work.

From a medical point of view, the colony is divided into four sections, each of which is cared for by a physician who has two section guards to help him. These physicians must devote themselves exclusively to the care of the insane, and are formally forbidden to practice, except in matters of expert medicolegal work. They must visit the curable patients once a week and the others once a month. At each visit the physician signs a card which the patient's guardian keeps, recording the condition of the patient's room, general care and condition. The section guards see that the physician's special orders are carried out, and report each evening to his superior. After each physician has made a morning's report of his own and his assistant's work, the Medical Director finds himself in close touch with all the work of the Colony.

At a first glance it would seem as though considerable time must be lost daily in going from house to house, and it is true that the distances which must be traversed take considerable time,

as some patients live several miles from the administration building. As the placing of patients in families is decided by a local committee in the town, and does not rest wholly with the Medical Director, there is some friction caused by the fact that patients are not grouped as conveniently as they might be, and are not always placed in surroundings suitable to their cases. But this limitation of the Director's power seems to be the only one that causes any trouble in the harmonious and wise administration of the colony.

The physicians travel from house to house chiefly by bicycle, covering long distances by the local train. The ease with which a physician can care for a ward full of patients in an institution as compared with the slow personal visiting is at first sight a factor in favor of the institution system, but when it is remembered that four men and eight deputies attend systematically to over 2,000 patients, and that no paid attendants are employed, it will be seen that the system is arranged much more economically than in our institutions, and that the only persons who might have



THE INFIRMARY AT GHEEL.

reason to complain are the hard-working young physicians themselves, who, on salaries as proportionately modest as are all the other expenses of Gheel, nevertheless do very excellent routine work, as well as original investigation.

The personal interest and oversight of the Medical Director was apparent within the first quarter of an hour's tour of the infirmary with Dr. Peters. The spotless condition of the bare floors, windows and plain furniture and bedding indicated a cleanliness arising from work which lent an impression of thrift and good management that one does not get in a modern tiled and plumbed institution of America. In a large and cheerful sitting room a few patients were gathered, who, though possessed of means sufficient for a private institution, had been sent to Gheel for the benefit of family life, and were on account of their greater refinement, lodged more nearly under Dr. Peter's care; but with the exception of a few who had been suffering from a period of disturbance, or slight accident, and a few aged patients who were nearing the end, the Infirmary was not occupied; for the class of patients who are sent to Gheel are such as require but little hospital care.

As a rule they are all able-bodied and are taken largely from rural homes where their presence is

a hindrance to the other members of their families, and are transferred to the homes of Gheel where their slight services combined with their board make them a welcome addition to a poor community. No patients are admitted to the colony who must continually be kept under restraint, nor who would offend public decency; and none who have homicidal, suicidal or incendiary tendencies.

All who are able to work are paid a small sum each week by their nurses or hosts. Some work in the field, others in the shops, while the women tend children, prepare vegetables and do household work.

According to their value as workers or to the care they require as patients, the sum paid to their nurses for their board by the state varies. In our land of luxuries it is impossible to believe how little is required for the per capita maintenance of the patients on this system.

Paupers who are able to work and who are quiet and orderly, belong to the first class. For them 64 centimes, or about 12 1-2 cents is paid daily for board. In this class are a good many idiots and demented. For paupers of the second class, those who are noisy or semi-depraved, 80 centimes, or 16 cents a day is paid. Patients of the third class, wholly depraved or epileptic, bring with greater care the larger revenue of one franc, five centimes, or 21 cents a day, to their nurses.

Patients whose friends have means can be lodged with more comforts at a higher rate in the

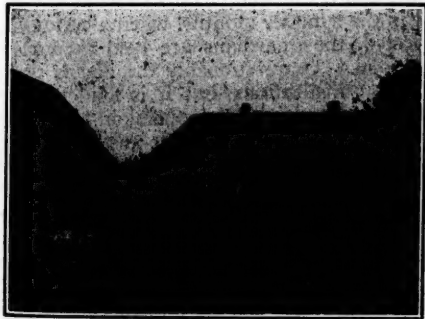
morning so we were obliged to make a typical day's rounds in the usual fashion.

A ten minutes' ride in the railway train brought us to a little hamlet of half a dozen cottages, farms and a few houses near each other in the road. These latter seemed to bear a commercial relation to the others. In one bread and ginger-cookies were sold. A woman came into the bare front room where the counter was, with several children clinging to her skirts. Through the open door we could see in the clean little back court beyond the "big child," a dull-looking imbecile, who was slowly peeling potatoes, and around whom the children immediately went to play, as soon as we had bought out the stock of one of their mother's candy jars for them.

In the next house, a few deal tables and the presence of the man of the house and several others eating bread and cheese, indicated a tavern. A sleek, melancholy looking man of thirty, with a child-like smile, was the patient. He was afflicted at times with religious mania, and his guardian, the tavern keeper, explained in detail, and with considerable intelligence, their boarder's condition for some days past, his silence and troubled stare and continual praying, which he feared was the preliminary of an attack. The neighbors listened with interest and the patient sat among them brooding in his corner, in the attitude of one who is aware of sympathy-rather than of being shunned. In his rooms were several religious pictures and adornments, as well as family photographs. These showed his family group, of evidently well-to-do tradespeople sitting on the porch of a suburban home. He wrote to them and received their letters, but seemed to be perfectly content in the less conventional surroundings of friendly farmers.

In a third house which we entered we found a picturesque interior belonging to the type of low thatched farmhouse, which is now giving way to the slated brick house. In this an enormous crane in a huge fireplace supported a great iron pot, in which over a tiny fire, a mash was being prepared for the cattle. When it was ready the kettle was swung round to a low door beside the fireplace that entered directly into the stable, and there tipped up, without being taken from the crane in the living room, the mash was poured directly into the trough of the cows, who had their heads well within the door in their expectation.

A little old dame of eighty years was the guardian in this home. Her short petticoat and wooden shoes, the sanded floor with its combed pattern, the little white curtains and pots of flowers in the windows, and the row of bright pewter plates on the dresser, all had a flavor of a faraway time, that this prosperity of 21 cents a day income was fast driving out of Gheel. She brought out her patient with the pride of a grandmother. He was a clean, palsied, smiling old fellow of seventy, whom she and her husband had cared for for fifty years in this home. His shaking fingers were covered with brass and wooden



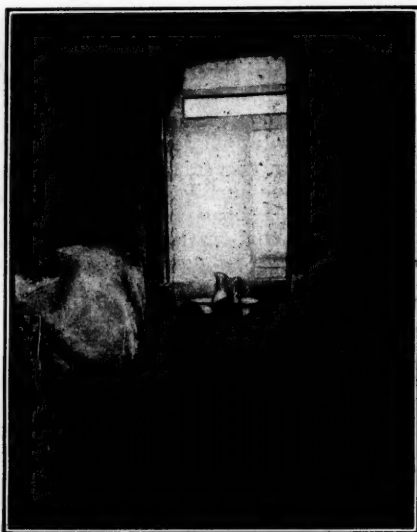
TYPE OF HOUSE IN WHICH PATIENTS ARE QUARTERED.

homes of the more well-to-do. For, through the long establishment of the custom, the permission to have patients is largely sought as a favor by nearly all the householders of Gheel.

It was with these statistics in mind that we started forth with Dr. Masoin, one of the attending physicians, to make his daily rounds. Our institutionized proclivities demanded a carriage in order to see the most in the shortest time, but there appeared to be no coach and pair even at the bidding of the superintendent, and our efforts to engage any kind of a conveyance in Gheel proved fruitless. The pilgrimage to the shrine in a neighboring village was still a drawing attraction, and every horse had jogged off with a load in the early

rings over the knuckles. These he played with and held them up sheepishly for inspection. His guardian told us indulgently that he had a sweet-heart and was engaged to be married to her, and patted him as she would a child, at which the old fellow nodded and laughed and mumbled garrulously.

This was a prize household, for on the walls were several little plainly framed cards certifying that once and again she and her husband had won one of the money prizes, which are graded up to twenty-five francs, for the best personal care of their patients and the most neatly kept rooms and house.



A PATIENT'S ROOM.

In every case the physician went into the patient's bedroom, ripped open the bed, and saw that its course sheet and woolen blanket were clean, examined the additional garments hanging on the wall, and entered his report on the card which the guardian brought to him as he entered. In all cases the tiny bedrooms were scrupulously clean and the bare floor sanded. They were generally on the first floor and opening directly off the living room. In many of the more modern houses they are built expressly for the patients and supplied with a regulation style of bed and bedding. The doctor included in his inspection the food of the household, the back yard, which seemed to be the family gathering place and work-room, and the patient's personal appearance. The card was checked with his visit. A system of card checks is used for the visits of both the physicians and the attendants. These are subjected to direct supervision at stated intervals. Such supervision is far from perfunctory.

The food of the patients is the same as that of their guardians, and consists of vegetables, pota-

toes, salt pork, milk and bread and butter. Very little fresh meat is used, and then generally as a stew. Much of the bread is of rye. The patients eat at the table with their guardians, and as there are never more than two in a family, they are absorbed and made part of the family life. More than that number would make a separate faction in the family. Although the food is not of a high grade, it is the food of the peasant class to which most of the patients belong; so it is quite as good as they would get in their own homes.



NEW BATH-HOUSES FOR THE COLONY.

The guardians are obliged to feed their patients as well their payments will permit, and a sort of check is kept upon them by means of the bath-house weighing system. In several parts of the community have been erected neat bath-houses to which patients are taken in detachments each week. Once a month each patient must be weighed, and if the weight falls short at any time except in the summer months, when a certain loss is expected, the guardians are held accountable for his food. Unquestionably the diet is poorer than in our institutions, but it is evidently sufficient, and a system of inspection among the deputies who may happen in at any meal to examine the fare, tends to stimulate the housekeeper to make the most of her rather restricted means.

Many features of medical and economic interest were for a time lost in the charm of the unique surroundings of this Colony of Gheel. Innumerable questions arose, to be forgotten in the quaintness of the landscape and the picturesqueness of the people, their houses, and their thrift and their poverty.

It seemed so different a people and so far away a time that comparisons for our own peoples, and our own times appeared impossible. What has been built up at Gheel through centuries cannot be suddenly reproduced here in America. The idea is being developed, as we all know, in several communities in different States, but we can never hope to build up artificially a system which in its most essential features can resemble Gheel. Could we find here and there a simple kindly farming community discouraged by the stern laws of supply and demand, and imbue the inhabitants with a combined spirit of philanthropy and commercialism, we might gradually with great tact find homes for many thousands of our insane, in the course of the next fifty years.

64 West Fifty-Sixth Street.

PERSONAL EXPERIENCE IN THE TREATMENT OF TYPHOID FEVER.¹

BY CARTER S. COLE, M.D.,
OF NEW YORK.

ALL of us who have had any considerable experience in any direction are prone to believe, either correctly or incorrectly, that we have found some way to meet the problems offered, which is easier for us (and as safe for our patients) than any with which we have become familiar from the literature. Or, it may be fairer to say that our experience has been crystallized so as to offer in a way that is the result of reading and experience something that is in effect the same, but is in reality different. In short, our individuality must be impressed upon our work, and it is with this understanding that I presume to give you a short review of my own experience in treating a disease all too common and, alas, too frequently fatal.

As far back as 1887, when in the Charity Hospital (Blackwell's Island) I carefully reviewed the subject in many authorities, and in a lecture given to the nurses there the following year, I stated as my belief that the nurse who was fitted to care properly for a case of typhoid fever needed no other testimonial to her ability in her profession.

Fifteen added years of experience with that disease have amply justified this statement, and I might add that the physician who is abreast of every possibility in that disease is well equipped to care for a large portion of the ills of mankind.

To fairly fix a plan of treatment in any disease it seems to me quite necessary to be agreed on the etiology and pathology of the same; and, fortunately, in typhoid fever, this is settled with sufficient security to enable us to draw some warranted inferences as to what we must expect and how far we can hope to influence what we find.

The existence of temperature is a necessity, is a part of the disease, and its control is our important mission; the state of ulceration, the character of the typhoid poison in the individual case and its effect on the patient are our guide posts as to what is a normal increase of temperature in the case under our care. In short, every case of typhoid has its own peculiarities which must be noted, and carefully considered in carrying out the treatment for that case. This is true not only in regard to temperature variation, but also as to the nutrition, intestinal condition, nervous condition, tongue conditions, etc.

I could illustrate indefinitely, but one or two instances will be sufficient to emphasize my meaning. Two gentlemen in general about the same age, size and vitality, contract typhoid from apparently the same source and at the same time. One has a high-fever type, with an eruption from his neck to his feet. The other never has a temperature over 100° F., and a very limited abdominal

rash. The one is delirious all the time and dies of heart failure at the beginning of the fifth week; the other is never delirious but has almost a melancholia, from which he does not recover for nearly a year.

Again, a child has a frightful attack of typhoid of the high-fever type, characterized by a profuse eruption, accompanied by a pneumonia in the original attack and by an infection of the large intestine in the relapse. One of her nurses contracts the disease and has a comparatively simple attack with few spots, with low temperature, and only troublesome on account of the great difficulty in keeping her sufficiently nourished by reason of an ever-present nausea.

The first is fatal, the second makes a good recovery, interrupted only by return of temperature due to interference with intestinal secretions and to a lack of nutrition, owing to the difficulty mentioned.

And, let me here remark the frequency of this form of recrudescence, often wrongly attributed to reinfection, the error being especially serious to the patient, as the treatment of the two conditions is absolutely different. In cases of relapse the same treatment must be pursued: in recrudescence due to low vitality and not to reinfection solid food must be added and the nutrition generally improved. I might indefinitely parallel cases, apparently due to the same infection, but absolutely different in their type and in many manifestations.

We all know that the high-fever type in the first week does not necessarily mean high-fever type for the whole attack, and we know too well the false security that the early low type of fever is apt to engender. Perhaps it is fair to say in a general way that 101° F. is the average fever type for the first week; 102° F. that of the second week; and 103° F. that of the third week, and basing my belief upon this generalization, admitting that higher, and less frequently lower types are by no means uncommon, I have for years systematized my baths and my stimulation, using the actual fever in the individual case as my guide.

The same is true in regard to nutrition. Some cases need much more nutrition than others; some get along better with a limited amount of nutrition. All cases in my experience do best on an absolutely liquid diet during the fever period.

In planning then the treatment of the typhoid case, we must consider: First, the nutrition; second, the stimulation; third, medication; fourth, antipyresis.

On the question of nutrition there is a fair degree of unanimity, except as to detail. Peptonized milk and koumyss have been my general sources of reliance for nutrition, and with slight variations for the individual case, I order six ounces every two hours between 6 a. m. and 12 midnight, with a single feeding usually between 12 midnight and 6 a. m. Sometimes I make the interval three hours and seldom find cases in which I am unable to give 48 to 50 ounces of

¹Read before the Alumni of the Charity City Hospital Wednesday, March, 1904.

²Received for publication April 8, 1904.

liquid nutrition in the twenty-four hours. Water I allow *ad libitum* throughout the disease.

When I find that milk in any form is not well borne I employ some of the beef, mutton, chicken, clam or oyster broths, the white of egg and sometimes the yolk of one or two eggs, always recognizing the fact that when we are unable to use milk for nutrition the troubles for our patient and ourselves are multiplied.

Next we consider the subject of stimulation, and on this point there is considerable difference of opinion; my own preference is for good whisky in one-half ounce doses where it is well borne and does not cause an increase in the pulse but seems to steady and strengthen it, given after each bath, or if it cannot be taken so often, at least four times in the twenty-four hours. Some patients cannot take any form of alcohol, but those that can are more easily furnished with something for combustion which will save the tissues and conserve the strength. In fact, in my experience alcohol has been quite as valuable for food as for stimulation. The cases which cannot take whisky will sometimes take brandy very well, the dose being a little less; occasionally champagne can be used to advantage. Other wines have not proved very valuable in my hands.

The question of cardiac stimulation has been readily solved for me by the use of nitroglycerin and strychnine in the cases in which it seemed to be indicated. I have found it necessary occasionally to begin the use of these drugs almost at the outset and continue into the period of convalescence. In several cases I have found that they were not required at all. In the majority of cases I find that the use of 1-100th of a grain of nitroglycerin and 1-50th of strychnine from two to four times in the twenty-four hours, beginning about the tenth or twelfth day, and keeping up the administration into the convalescent week, seems to give the heart useful stimulation and support. Where the strychnine seems to increase the nervous and muscular irritability, we must substitute some other form of heart stimulant. Strophanthus is useful, and in some cases digitalis seems to be of benefit, but my preference is always for the first named drug.

The third on the list is medication and can be very easily disposed of. Aside from meeting special indications I may say that I use no drugs at all. At the outset I like to get the intestinal canal thoroughly cleansed, usually by a dose of calomel followed by a saline cathartic; after this I seldom if ever find it necessary to use any catharsis at all, the bowels being moved either daily or every other day by the use of a simple enema.

In cases in which hemorrhage threatens, or is present, I find the treatment employed for many years by Dr. Pepper of Philadelphia entirely efficacious, viz., one-sixth grain of nitrate of silver given every three, four or six hours, or even as often as every two hours in individual cases. I have not found it necessary to follow his practice in giving it in all cases from the beginning of the second

week to the end of the third week, but I have not hesitated to do so in the high fever type, where considerable intestinal disturbance seems to threaten. I have not found that adrenalin acts as well as the nitrate of silver. In cases in which there is much diarrhea I use a powder of pepsin five grains, bismuth subnitrate fifteen grains, soda bicarbonate fifteen grains and powdered opium one-sixth grain, and repeat this powder after every second movement. I do not recall ever having used the powder more than twice in twenty-four hours or more than one-half dozen times in the same patient. Abdominal distention has been a rare exception in my cases, but when it has been present has seemed readily to yield to the use of turpentine stupes externally and ten to fifteen drops of spirits of turpentine internally, three or four times in twenty-four hours. In convalescence, and sometimes even in the third week of the disease, quinine in 5-gr. doses twice or even three times in the twenty-four hours seems to act as a good tonic. More especially is this true in cases which have previously had a distinct malarial history.

On the question of antipyresis there is much to be said, and yet I believe that the experience of those who have had most to do with typhoid fever is fairly unanimous in support of the proposition that the coal-tar products used with any degree of frequency do more harm to the heart muscle than would the temperature. It is comparatively easy to reduce the temperature by any of the many coal-tar products, but it is not so easy to restore tone to the heart muscle and to the intracardiac ganglia after they have been assailed by such cardiac depressants. Consequently I may say that practically I never use the coal-tar products in the reduction of temperature; and while we do not always, by either the tub bath or the sponge make any material change in the temperature, in fact, frequently a slight rise will follow the bath, although this is later followed by a fall in temperature, we do make a decidedly favorable impression upon the nervous system and upon the skin, we do furnish added water for the system to consume, with increased elimination of waste products both by the skin and by the kidneys, and do in a measure hold in check the advance of temperature.

My experience with the Brandt method has not been as satisfactory as with sponging. There are many reasons for this. Some patients are much disturbed by being lifted out of bed into the tub, others are quite as much disturbed even where the tub is made in the bed itself. Some patients cannot even stand cold sponging, and in this case we are forced to use the tepid sponge. Indeed, in many cases the tepid sponging seems to be as efficacious as any other kind, although in high temperature cold sponging is much to be desired, and where well borne seems to give much better results.

Returning to our original proposition that fever is a necessary part of the disease and that a certain type in a general way characterizes the dis-

ease in the first, second, and third weeks, we have upon this presumption for a number of years reduced our sponging to a matter of system which can be very easily presented in a few words.

For temperatures up to and under 102° F., tepid sponging twice a day; up to and under 103° F., tepid or cold sponging three or four times a day. Up to and under 104° F., four times a day, and over 105° F., every two or three hours.

I may add here that when I use whisky I give it after the bath, not before. In the individual case I may use whisky less frequently, and in children when I use it at all I do so in one or two teaspoonful doses.

In the treatment of the complications we must follow the lines indicated by our own experience, remembering that we have the typhoid poisons to deal with in addition to the complication itself. In one case that I recall a very severe pleurisy came on during convalescence when the patient was almost ready to leave the hospital, the pleuritic fluid giving always the Widal reaction. The pleurisy gave us more trouble than the typhoid, but eventually the patient made an excellent recovery. In this case a withdrawal of a considerable quantity of the fluid was necessary for the patient's comfort, but in another case if we found that we could make any impression upon the pleurisy without the use of the aspirator we should not be inclined to enter the chest cavity.

I am not, however, inclined to take up the question of complications, as it is an entirely independent subject.

In conclusion, we can thus summarize:

First—Fever is a necessary part of the disease and varies according to the week in which it occurs.

Second—We cannot change the type although we may control the fever.

Third—The use of coal-tar products for the reduction of temperature is seldom if ever desirable, but the use of water externally and internally is a necessary part of the treatment of the disease.

Fourth—Nutrition must be liquid and must be adapted to the individual case.

Lastly, medication plays a very small part in the management of the disease and is only used to meet special indications.

EXTRAUTERINE PREGNANCY—SOME OBSERVATIONS IN A CASE RUPTURED BY EXAMINATION.¹

BY W. L. WALLACE, M.D.,
OF SYRACUSE, N. Y.

PRIMARY extrauterine pregnancy is classified according to its location in the tube. The common variety is situated in the dilated outer portion and is called *ampullar*. Much less common is the *isthmial* variety, situated in the narrow inner portion, near the uterus. A third variety occurs in the portion of the tube passing through the sub-

stance of the uterus, and is therefore called *interstitial*. If the extrauterine pregnancy changes its position or condition by rupture or further development, it is called a secondary extrauterine pregnancy; thus, following the ampullar and isthmial varieties, we have the tubal mole and tubal abortion, the tubo-abdominal or abdominal, and the intraligamentary varieties.

Kelly had 23 cases of extrauterine pregnancy in 1,000 celiotomies reported in 1898, and others have reported a higher ratio. In 300 celiotomies, I have had nine cases, as follows: One double ampullar, ruptured on right and unruptured on the left side; three ampullar, ruptured; one ampullar, unruptured; two tubo-abdominal, probably secondary to ampullar; one isthmial, ruptured; one interstitial.

The interstitial variety is rare, Martin observing only one case in seventy-eight. It is situated in the cornu of the uterus, overlapped by the round ligament; and the abdominal portions of the tube are not involved. It may push into the uterus and continue as a uterine pregnancy, in which case a large portion of the placenta may be left in the tube, complicating labor; or it may rupture into the broad ligament or the abdomen. According to Kelly, this variety is peculiarly liable to rupture, and the hemorrhage is generally rapidly fatal.

The following case of interstitial pregnancy was fortunate in having the rupture occur in the hospital with the operating room ready and assistance at hand:

Case I.—Mrs. D., aged twenty-four years. First seen January 5, 1904. *History.*—One child, three years old, one child thirteen months old, which had nursed until seven months old, August, 1903, when the mother's breasts had dried up. The patient menstruated regularly from the second month, the last time, October 30, when the baby was ten months old; no blood or other discharge since. December 1 she passed over menstrual time, had much nausea, thought herself pregnant; had occasional pains after December 1. Christmas day had quite hard pain for a short time, no tenderness. December 28, 5 P.M., sudden pain, severe, located around the navel, lasted all night, no faintness, patient screamed. A doctor was called, but could find nothing, and concluded that an abortion was threatened. Patient was confined to bed one week by pain and tenderness, but gradually improved. No chill, and no bladder or bowel symptoms. January 5, the patient had been up around the house two or three days; at 3 A.M. was awakened by severe pain which lasted one hour and was again severe at 7 A.M., and hard all day.

Examination.—I saw the case at 8 P.M. January 5, 1904, in consultation with Dr. Chaffee. The pallor was striking, so that the first thought was, hemorrhage from extrauterine pregnancy; but any prejudice in this direction was dispelled by finding pulse 80, temperature 98.2° F. The abdomen was not distended and not very tender. A watery discharge was squeezed from the nipples. No vaginal discharge. The uterus was very low,

¹ Received for publication April 9, 1904.

cul-de-sac bulging and very tender. I could feel no mass, and the extreme tenderness fortunately prevented any satisfactory examination.

Diagnosis.—Probable extrauterine pregnancy, in spite of the fact that there had been no irregular bloody vaginal discharge. The patient was sent at once to the Good Shepherd Hospital, in an ambulance, at 9 P.M., for further observation.

January 6, temperature 99° to 100° F., pulse 80 to 90. Leucocyte count 10,400. Considerable pain and much tenderness. January 7, condition the same, and the patient was therefore taken to the operating room at 9.15 A.M. for examination under ether. The uterus was retroverted and at the left and enlarged to the size of a four to six weeks' pregnancy; no mass could be felt at the side or posteriorly. I replaced the uterus easily, and not finding a mass concluded that we were dealing with an incarcerated pregnant uterus and threatened abortion. 9.30 A.M., patient left operating room, pulse 120. 9.45 A.M., I was called. Pulse was 180, patient perfectly conscious, recovered from anesthetic. 9.50 A.M., I watched the case five minutes while the operating room was being prepared. The pulse dropped to 140 and therefore I waited five minutes longer. 10 A.M., pulse poorer and poorer, but somewhat slower; great pallor. 10 A.M., as the patient was being placed upon the table, apparently dead, I punctured the cul-de-sac, as I could not believe that the pulse could keep getting slower with a fatal hemorrhage. Fresh blood gushed from the puncture. Abdomen was rapidly opened, without stopping for anesthetic. Patient, unconscious, gave no sign of life. Abdomen full of bright red blood. The hemorrhage was stopped, the abdomen washed out with hot saline; while the abdomen was being closed intravenous saline was given. As soon as the hemorrhage was stopped and the hot saline started, the pulse returned, and the patient commenced to show signs of pain. A few whiffs of chloroform were then given. Half an hour later the pulse was 140 and it soon fell to 128. The temperature and pulse stayed high for three days and the patient had headache. The wound healed by first intention, and by the end of a week she was in excellent condition.

Now, to return to the *conditions found at the operation*. There were no adhesions and no mass was present. I reached in and pulled up the right tube and ovary. They were normal and were dropped back. I then reached the left tube and ovary, and was surprised, as they also were normal. Dropping the left tube and ovary I reached the uterus and pulled it up into the incision. It was enlarged, as if about six weeks pregnant. A ragged rent was found in the right cornu of the uterus, large enough to hold a horse-chestnut. Chorionic villi could be seen in this cavity. The tube itself looked perfectly normal, but was entirely separated from the uterus. An artery coming up at the side of the uterus was pumping a large stream, with great force. This artery was tied, and the opening in the uterus was closed,

after the ragged edges had been cut out, by an incision which extended down to the uterine mucosa, including an oval two by one inch and nearly one inch deep. The fetus was found floating in the blood.

Observations.—This case demonstrates some of the difficulties in making the diagnosis in hemorrhage. It illustrates the advantages of the saline infusion. It proves the danger of rupture by examination.

With regard to the pulse rate, this case has taught me the danger of being misled by a pulse which becomes slower even while a hemorrhage is taking place. The slowing of the pulse might be accounted for by the suddenness and rapidity of the hemorrhage, which induced syncope on the one hand, and thus lowered the arterial tension; and, on the other hand, left so little blood in the veins, that the ventricles were a longer time in filling. This slowing has not occurred in less rapid hemorrhages which have come under my observation. For instance, in an extrauterine pregnancy operated in the same hospital a few months ago, the rupture was at the middle of the tube, and while severe and protracted, was not violent.

Case II.—March 20, 1903. Mrs. J., aged thirty-two years; one child, three years old. Menstruation normal and regular until last time, which was six weeks ago; no blood since. Two days ago, when twelve days past time to menstruate, she was taken in the night with sudden pain, which has continued with great severity.

Examination.—Breasts negative; cervix soft; uterus large with a mass behind. Dr. Levy, who sent the case into the hospital, had made the diagnosis of ruptured extrauterine pregnancy, and it was evident that the woman was bleeding. Her husband, however, refused to allow an operation to be done until twelve hours later, by which time he himself could see that she was dying. The pulse *gradually increased in rapidity all day*, until, when we operated, it was 200, and imperceptible at the wrist.

While writing these notes, we have had another experience. February 10, 1904, with hemorrhage in extrauterine pregnancy; a typical case, tubo-abdominal, in which primary rupture must have occurred during December at eight or ten weeks.

Case III.—Mrs. E., aged thirty-three years; three children, eight, five and three years old. Menstruated regularly; the last time October 10, 1903. In November was two weeks late, and flowed much less than usual, and has since had irregularly a dark, bloody discharge. The patient had very sharp pain a few days before Christmas, was tender and faint, and has since had several attacks of severe pain with faintness, and on December 29, fainted away. Has become very anemic. Temperature has been found 98 to 101° F., and pulse 90 to 120. No nausea or chill. Has had much vesical irritability, and believed herself pregnant. Examination February 9 revealed fluid in the breasts; color of vulva normal; cervix very

soft, with a large mass behind and at the right of the uterus. Temperature 99.4° F., pulse 100. The danger was explained, and an operation advised; but it took six hours of hard pain to make up the patient's mind. She came into the Hospital of the Good Shepherd at 3 P.M. February 10, and was operated at 4 P.M.

The patient was extremely anemic, blanched, her blood vessels seemed empty, she was greatly distended, and the operation revealed, in addition to large masses of clots of various ages, an abdomen filled with dark red blood, that must have escaped during the preceding twenty-four hours; enough in quantity to exsanguinate the patient, and undoubtedly enough to have killed her had the hemorrhage been rapid. Yet before the operation the pulse was only 120, and it did not go above 150, when she left the table it was much lower, and soon fell to 120; and her recovery was rapid.

It may happen that a patient who has had a frightful hemorrhage may have a slowing pulse or even a fairly slow pulse, depending upon the rapidity of the hemorrhage and its cessation or continuance. In a probable abdominal hemorrhage in a woman, a vaginal puncture may be advisable to settle the question.

With Regard to the Intravenous Saline.—The administration of an anesthetic and manipulation of a half hour abdominal operation, are a great strain on a patient who is in good condition, and we expect shock. But when the patient is on the verge of the grave from a rapid and severe hemorrhage, already in profound shock, gasping for oxygen, what shall we say of the prospect of giving an anesthetic and opening the abdomen?

We cannot wait for our patient to rally, for we have no right to expect the bleeding to stop, and we are obliged to proceed at once. When the anesthetic has been given ten minutes, and the arm of the operator is down to the elbow in the blood in which the intestines are floating and in which nothing can be seen; while the hand is picking out and bringing up the bleeding area from beneath the clots where almost nothing can be felt; with the patient still bleeding and having no blood to be lost, the case becomes desperate indeed and the shocked condition of the patient is terrible. She stops breathing, and the anesthetic is taken away; and the man at the pulse is wont to say, "It is of no use, pulse 150—180—gone."

However, a change occurs, for with everything in readiness, in the second that the operator has clamped around the bleeding area, the saline has been started and oxygen applied, and as the amount of saline administered is read off 200 c.c., 250 c. c., 400 c.c., the pulse begins to return and is called off 180 160 140, the respirations are gradually resumed; the change is remarkable, the operation is satisfactorily completed, and the patient leaves the table in excellent condition.

These three cases were saved by the intravenous infusion, and it would be great folly to operate for ruptured extrauterine pregnancy without being prepared to use the saline. In accident cases, with crushed limbs and injured nerve centers, the vaso-

motor system is paralyzed and the saline is disappointing; but in hemorrhage cases with the artery tied, the effect is magic. The flow, however, should not be started until the hemorrhage has been stopped, or the loss of blood will only be increased. And the danger of giving too much saline is great and grave, and should ever be kept before us. If the blood is too much diluted, the tendency to bleed is greatly augmented and the surfaces of adhesions otherwise harmless, may ooze profusely, prolonging the operation.

The proper amount of saline is small, for the blood pressure is soon restored. After enough has been given, fluid begins to pour out through the gastro-intestinal and respiratory mucous membranes as fast as it runs into the veins, and if continued the blood pressure rapidly falls, the lungs, liver, and other organs becoming edematous, and the patient is drowned. The old directions were to crowd the saline, giving four quarts or more if necessary, that is, if the blood pressure did not keep up, and many and many of these patients were said to die in spite of four quarts of saline:

Crile¹ has shown the good and bad effects of saline infusions. In his experiments on dogs, although some were saved when a large amount of blood had been withdrawn and a large amount of saline introduced, especially when oxygen and artificial respirations were used, yet, in the average case, a fatal dose was found to be very small, about 6 c.c. of solution to each pound weight of the animal; and the saline was found to be particularly dangerous when chloroform was used.

In these three cases of hemorrhage from extrauterine pregnancy, as soon as the pulse was full and the second sound of the heart commenced to be accentuated, the saline was stopped. Each of these patients weighed about 120 pounds and of course their veins were empty when the saline was started. They received 700 to 1,000 c.c., or about 5 to 8 c.c. to each pound of their weight. In addition, each received about one pint in the abdomen, and one quart in the rectum, for later and slower absorption.

With Regard to the Danger of Rupture by Examination.—I believe an examination in a case of extrauterine pregnancy is apt to clear up any doubt in diagnosis, as it is certainly quite liable to rupture an early case, and start up hemorrhage in one that has already ruptured.

When we look back on our cases, we see that the symptoms following the examination were striking. And when we consider the conditions found at operation, we cannot see how the most careful examination can be made without the greatest danger. When a tube the diameter of a lead pencil is bulged out to hold a lemon or an orange, it is certainly on the point of tearing. And when partial rupture has already occurred, and the mass in the tube has begun to extrude through the rent; when the hemorrhage from the torn vessels has been stopped by a tender clot being spread out over the bleeding area, only to be torn away and

¹Problems Relating to Surgical Operations, Lippincott, 1901.

plastered up again the next day, as the mass has become larger and has been further extruded; when a rupture is so liable that the patient is often awakened from quiet sleep by the agony of another explosion, does it not seem strange that it is ever possible to make any examination without accident?

As there were no clots present in the case of interstitial pregnancy, the sudden violent pain that had occurred a week earlier must have been caused by a stretching and tearing, that had not yet amounted to rupture; but as the operation, which was performed one-half hour after examination, found the abdomen full of red blood, we must conclude that the pregnancy was ruptured by the examination.

The first case, used in illustration, had commenced to rupture two days before the examination; possibly the clots found at operation had temporarily stopped the hemorrhage. However this may be, she certainly had bled from the time of the examination until the operation, and it would seem impossible that any reasonable examination could have been made without breaking up such soft clots as were present.

The other case had ruptured two months earlier, and was continuing as a tubo-abdominal pregnancy. The diagnosis was plain, but the patient refused to go to the hospital. However, during the next few hours after a most careful examination, so much pain and soreness were experienced, that the patient herself soon became anxious for the ambulance.

Being always so dangerous, it is of the greatest importance to recognize extrauterine pregnancy, and when in doubt it would be better if necessary to have the examination produce a little hemorrhage and clear up the diagnosis, rather than have the condition continue to develop. But the danger of rupture by examination ought to be remembered, and a suspicious case ought to be carefully watched for a few hours after an examination; and in a probable case, it would be much safer if the examination could be made in a hospital operating room, where a vaginal puncture and exploration could instantly clear away any doubt in diagnosis, and any necessary operation could at once be performed with safety.

A NEW BRACE FOR THE SHOULDER JOINT.¹

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THE accompanying drawing illustrates an apparatus which I devised some time ago for a case of tuberculous shoulder-joint disease. It is very simple and can be made by any brace-maker. It permits motion and use of the fore-arm, and restricts motion of the shoulder in every direction except rotation—the least harmful of all motions of the joint. It was devised for a case that had lasted a number of years and had undergone

operation several times, and, after the lapse of about one year, appears to have cured the disease.

The brace consists of a belt of canvas three or four inches wide which encircles the chest just



below the axillæ, and laces in front. A similar belt encircles the arm. These two belts are joined by two flat, arching metal rods, in front and behind, on whose inner ends are riveted metal plates to prevent twisting of the thorax girdle. Finally the thorax band is provided with a pair of suspenders to prevent sagging.

The latest use I have found for this brace was in a case of recurring dislocation, but the patient, a bartender, found that it restricted the motion of his arm too much, and soon gave it up.

451 West End Avenue.

THE EARLY DIAGNOSIS OF POTT'S DISEASE.¹

BY FRANK P. VALE, M.D.,

OF WASHINGTON, D. C.

THE best way to avoid overlooking Pott's disease, is to keep constantly in mind the possibility of its existence. Within a few months two cases have come under my notice in which, even at an advanced stage, the affection had not been recognized, though both presented the typical angular deformity which could have been immediately identified. When the disease gives us such unmistakable evidence of its presence there can be no possible excuse for a tardy diagnosis; yet no less an authority than Sir Frederick Treves, in a recent article in *The Practitioner* (London, 1903, p. 1), relates that he opened the abdomen of a patient with persistent gastric symptoms, only to have his attention called a few days after the unsuccessful exploration, to a "hump" on the back, which the nurse had accidentally discovered. And in both of the cases I have referred to, the clinical history should have brought Pott's disease to one's mind.

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The first case was that of a male, aged thirty-five years. His chief complaint, when he came to me, was the loss of the use of his arms. Ten months before he had been thrown from his horse in stopping a runaway. For two weeks following the accident he had sharp pains between the shoulders. They then disappeared for a short time, only to reappear with renewed vigor. The loss of power in his arms began about three months after the accident. He was then easily exhausted; often it was necessary for him to get off his horse and lie down on the side of the road, thus obtaining relief from his pain. Three, or four months later he began to suffer with an oppression and pain in the chest, especially on exertion. At times he could not hold his head up and would have to support his chin with his hand. His voice became husky, and his respirations wheezy, and about this time a diplopia developed. An examination of his back revealed, at the cervicodorsal junction, a well-defined projecting knuckle. An interesting fact was the history of a localized tuberculosis of the testicle, four years before—also of traumatic origin—which had necessitated removal of the organ. Twice then he had developed a localized tuberculosis following an injury, but had never shown any other tuberculous manifestation.

The second case was that of a young man of twenty-three years. His first symptoms dated back four and one-half years. He would often stumble and soon noted some weakness of the legs. His gait was so unsteady he was frequently accused of drinking to excess, and such reports came to the ears of his parents. From that time there has been a progressively increasing paraplegia. It is almost inconceivable that during all this time his back has never been examined. The pains in his legs had been called rheumatic; when he came to me he complained especially of severe pain over the crest of the left ilium. The final heroic effort in his behalf had been made a short time before. He was circumcised with the hope of curing the loss of control over his bladder and rectum. His appearance proclaimed a grave malady. His paraplegia had reached the point where he could hardly walk; in fact, for a year he had only been able to walk with his bicycle beside him for support. I was almost certain of what I would find before I had him strip—and there was the characteristic deformity in the middorsal region. Two months in bed, and a plaster jacket worn since for four months have nearly restored his limbs to their normal condition.

But certainly with regard to these advanced cases we only need have our attention directed to the possibility of such errors, to sufficiently profit thereby. The recognition of the disease before this unfortunate deformity occurs gives us most concern, and is the matter of vital importance.

As an illustration of the disease at this earlier stage I present the case of a nine-year-old boy. When I first saw him it was stated he had been ill but ten days or two weeks. From his appear-

ance one knew at once he was seriously sick. His sole complaint, however, was of pain in the stomach. He had always seemed perfectly well except for the apparently insignificant fact that for as much as two years he had at times complained of this pain. But as far as his mother's observations go his illness dates back not more than two weeks.

On examining the back there was no deformity or local tenderness. Partially supporting the weight of his body with my hands under his arms he volunteered the information that his stomach pain was relieved. In picking up an object from the floor his movements would hardly attract attention—there was no effort to support his weight with his hands on his knees, the rigidity of the back muscles simply prevented any arching of the spine. He hesitatingly jumped from a chair to the floor, but said it caused him no pain. Placing him face down on the examining table one could raise the thighs and pelvis and produce almost as extreme a flexion as normally, but when this was carried beyond a certain point he complained of exaggerated pain in the stomach. There was no psoas spasm. Lateral pressure on the ribs did not cause pain. He walked with his toes slightly turned in, and carried his shoulders thrown back and elevated. His abdomen was somewhat prominent.

Had a doubt existed as to the diagnosis it would have been removed by the radiographic appearances to be referred to later. The diagnosis has been confirmed by the further progress of the disease—though there is no deformity present, and I anticipate the disease will run its entire course without the appearance of any; a careful palpation in the middorsal region now reveals a very slight prominence of three spinous processes, and a little greater interval between them than is noted just above and below. The results obtained by the plaster jacket applied are also amply confirmatory, for without any other therapeutic measure being adopted the patient was immediately relieved of his pain, and has entirely regained a healthy appearance after an interval of two months. For two weeks, while his present removable jacket was being made, he wore one of plaster, which had been slit up the side and insecurely fastened, with the result that there was a return of the pain.

This history of abdominal pain is a characteristic one. We find it referred to even in the original paper of Pott in 1799. He says: "And soon the patient complains of frequent pains and twittings in his thighs, and of an uneasy sensation at the pit of his stomach." About fifty years ago Benjamin Lee (*Angular Curvature of the Spine*, Philadelphia, 1867) especially emphasized epigastric pain as an important, early and characteristic symptom of spinal caries. "This pain," he writes, "is almost invariably the first symptom of the commencing caries, or of the inflammation of the periosteum or intervertebral cartilage which precedes the caries. In nine cases out of ten the disease is ushered in by attacks of gastralgia. The

length of time during which the patient suffers from it before the ulcerative process has destroyed enough of the bone to produce actual and unmistakable deformity is variable, but it has been noticed not infrequently six months, and in some cases an entire year previous." In this boy there had been attacks of epigastric pain for two years, but it had received no attention until his appearance suggested there was something seriously wrong with him.

Pain at the site of the disease, however, is not significant or constant, but, on the contrary is referred to the area of distribution of the spinal nerves taking their origin in the affected region, producing these characteristic gastralgias when the disease is located in the middorsal vertebrae; the pain being referred to the rectum, bladder and lower limbs when the lumbar vertebrae are involved, and to the arms, chest and occiput when it is the cervical vertebrae. Pain in the back then, is a symptom frequently inquired for, but usually absent. But any peripheral pain, which does not yield to ordinary measures, should cause the spine to be carefully examined.

In some cases all pain is entirely absent, and the general impairment of health—which the physician is at a loss to explain—may be the only evidence of the slumbering inflammatory process. In rare instances, without either pain or marked impairment of the general health, the disease may progress to the stage of deformity without attracting attention. Even in the early literature of the disease we find mention made of this. Sir Benjamin Brodie (*Diseases of the Joints*, London, 1818) described "A case in which the patient had made no previous complaint, immediately after a slight exertion experienced a sudden pain, as if something had given way in the back, and at once lost the use of her lower limbs, and observed that the spinal process of one of the lumbar vertebra made an angular projection." Large abscesses formed, and she soon died.

Local tenderness on percussion, and sensitiveness to heat or cold, are signs to which diagnostic importance have been attributed since the earliest descriptions of the disease. James Earle, a contemporary of Pott, said (*Observations on the Cure of Curved Spine*, London) in 1799: "If suspicions are directed toward the back, the seat of the mischief may often be discovered by pressure with the fingers, or with the knuckles, gently on each vertebra, singly one after the other." Local sensitiveness to heat was first mentioned by Copeland in 1815 (*Treatment of the Diseased Spine*). He discovered it accidentally, he writes, in applying a moistened sponge to the spine, and cites a case in which, by the aid of this symptom, he recognized the disease before the occurrence of deformity. But the rapid cure obtained by his application of "caustic issues" causes one serious doubt as to the accuracy of his diagnosis of spinal caries. Even in our twentieth century text-books, especially those from German authors (Hoffa, Mueller, David), we find these signs enumerated,

though I express my own skepticism as to their value. A modern modification, to which they also refer, is that suggested by Rosenthal and Seligmüller—the sensitive spot being sought by the aid of the galvanic current, with the cathode in the epigastrium and anode applied along the spine.

Jones and Ridlon in a series of contributions to orthopedic surgery (*Provincial Medical Journal*, November, 1892) thus express themselves on this point: "There seems to be an almost universal belief among the profession, and this belief has been fostered by nearly all teachers and writers on general surgery, that the most early and constant—in fact the diagnostic—symptom of spondylitis is tenderness on pressure over the point of disease. There is no lack of knowledge as to the pathological anatomy; it is perfectly well known that the lesion is confined to the vertebral bodies and usually to their anterior portions. It is therefore quite impossible that there should be tenderness over the spine or transverse processes. Unless, then, there be disease of the processes or laminae, an exceedingly rare condition; or unless an abscess, which will not be readily detected by palpation, be present, tenderness on pressure will not be found in spondylitis. In a doubtful case its presence must count as an important symptom against true spondylitis."

In the early diagnosis of this disease the symptom of greatest value, the first to appear and the last to disappear, is muscular spasm. The same condition exists around chronically diseased joints of the extremities. This muscular rigidity is nature's method of limiting motion, relieving pain and insuring rest. Rest is nature's panacea; with the fluoroscope look through a chest at the lung acutely involved in a tuberculous process, and you see evidence of the same effort at repair through rest—the diaphragm on the affected side is almost fixed, its respiratory excursions practically nil.

This muscular spasm shows itself in different ways according to the region of the spine involved. In cervical caries it often produces "wry-neck." If suspicion is fortunately directed to the spine, one is confirmed therein by the relief obtained from extension applied to the head with the patient in bed. If one does not keep spinal caries in mind, unsuccessful tenotomies are sometimes performed. In young children, in the absence of wry-neck serving to attract attention to muscular rigidity if cervical disease is suspected, place the little patient across your knees and, to again quote Jones and Ridlon, "if the disease exists the child will not let the head dangle, no matter how prolonged the examination may be."

In the lumbar region the mild lordosis seen in early cases is in part the result of muscular contraction, i.e., psoas contraction—throwing the spine forward and necessitating the shoulders being thrown back—though in part voluntary, the patient naturally favoring this position as it takes pressure off of the diseased vertebrae. This

lordosis produces a prominent abdomen, which may be one of the first things noticed. Contraction of the psoas muscle at times produces a slight limp, or a sliding gait. With the patient face down on the examining table and the pelvis fixed, this spasm of the psoas is shown by one's inability to raise the knee the normal two or three inches from the table. This contraction of the psoas, flexing the thigh and limiting its extension, often leads to a mistaken diagnosis of hip disease. It has been seen so great as to necessitate the child walking on "all fours." With the patient prone, any rigidity also of the spinal muscles, even of the upper dorsal region, can be readily appreciated, by estimating the flexibility of the spine in raising the feet and pelvis from the table. In health this can be carried until the thighs are nearly at right angles to the back. Probably the best way to demonstrate any abnormality in the regular contour of the back, or limitation of its flexibility, is to have the patient stoop, or bend the body forward as far as possible while in a sitting position. The usual test is to have the patient pick up some object from the floor; the body will bend from the knees and hips, while the spine is held rigidly erect. In fact the rigidity of the back muscles is shown in every movement made.

There is one other effect, at least in part due to spasm of the back muscles, and that is diminution in the patient's height, which may be considerable even in the absence of deformity.

Paralysis of both legs, less frequently the upper extremities, may be the first symptom noted, at times antedating the appearance of the deformity several months. This "palsy" of the lower limbs was the one symptom which first led Pott to make a study of the disease. He says: "When the disease attacks a child who is old enough to have walked properly, its awkward and imperfect manner of using its legs is the circumstance which first excites attention, and the incapacity of using them at all, which very soon follows, fixes the attention and alarms the friends. . . . He at first complains of being very tired, is languid, restless and unable to move much, or at all briskly, for no great length of time. After this he may be observed to trip and stumble, although there is no impediment in his way; and whenever he attempts to move he finds that his legs involuntarily cross each other, by which he is frequently thrown down, and that without stumbling; upon endeavoring to stand still and erect, without support, even for a few minutes, his knees give way, and bend forward. When the disease is a little further advanced, it will be found he cannot, without much difficulty and deliberation, direct either of his feet precisely to the exact spot, and very soon after this both thighs and legs lose a good deal of their natural sensibility, and become perfectly useless for all purposes of locomotion."

If this disease is very liable to be overlooked in adults, how much more is this likely in children who cannot explain their ill feelings. Pott's state-

ment that: "When the disease attacks an infant of only a year or two old, or under, the true cause is seldom discovered until some time after the effect has taken place" is about as true to-day as it was then. Paralysis is shown in an infant only by the loose, flaccid manner in which the limbs lie, though the way it climbs to a sitting posture by seizing the edge of the crib might attract attention. The child lies quietly, if undisturbed, but cries at the slightest touch or the approach of any one.

In the examination of infants, Sayre was in the habit of taking the child across his knees and in separating them note the effect of the slight traction thus made—pain and difficult breathing often disappearing in a significant manner. It was Sayre who pointed out that in the dorsal part of the spine the sides of the vertebræ are primarily and most extensively involved. Lateral pressure on the ribs so as to force their heads against the facets produced pain, which he regarded as a valuable diagnostic point.

Waterman and Jaeger (*New York Medical Record*, November 9, 1901) after a study of a thousand cases on the record books of the New York Hospital for the Ruptured and Crippled, state that the first symptom noticed in infants and children under five years of age, was an unnatural attitude. Gastralgia, night cries and progressive weakness were the next most common first symptoms, while grunting respiration, inability to walk, and abdominal protrusion were present in but a very small number.

In disease of the upper dorsal vertebræ the chin is raised "suggesting the position of a seal's head when out of water" (Bradford and Lovett). In caries of the middorsal spine the shoulders are elevated and thrown back, thus relieving the bodies of the diseased vertebræ from pressure and aiding in the fixation of the spine. The patient walks with toes slightly turned in so as to prevent the heels from striking, and with more weight on the toes than on the heels, the better to prevent jarring of the back. In cervical caries a favorite attitude for the child is with its chin supported on its hands and elbows on a table or on its knees.

In this early case of Pott's disease I have brought before you the X-rays were a factor in confirming the diagnosis. The radiograph shows the space between the eighth and ninth dorsal vertebræ nearly obliterated. Superimposed on the cardiac shadow there is a fusiform shadow jutting out from the spinal column from the seventh to the tenth vertebræ, quite marked on the left side but less distinct on the right. It outlines the inflammatory exudations at the site of the disease.

It is surprising how little has been written on this subject of the X-ray appearances in early Pott's disease. Every one is agreed upon the difficulty attending the recognition of the disease before the appearance of the deformity, yet the references in medical literature to the value of the X-rays in this connection can be counted on

the fingers of one hand. In an article on the cure of spinal caries without subsequent deformity, by Royal Whitman, in the *Transactions of the American Orthopedic Association*, 1901, p. 359, is a cut showing the X-ray appearances in a case of early lumbar caries. Redard and Loran in 1898 at the Twelfth French Surgical Congress, p. 228, spoke most enthusiastically on this subject. In many of their observations an X-ray examination enabled them to establish the diagnosis of Pott's disease in its earliest stage, when the subjective and objective symptoms were not enough by themselves to justify it. Their plates showed the number of vertebrae involved, extent of lesions, loss of substance, existence of sequestrae and tubercular cavities.

Kirrisson, another French orthopedic surgeon, writes the only other paper on the subject of which I have any knowledge (*Revue d'Orthopédie*, 1901, p. 405). The X-ray appearances in this boy correspond exactly with those described by him. He writes: "It is especially in the dorsal region that radiography furnishes the most precious information. In the lumbar region, in docile children, deep palpation of the abdomen, enables one to recognize, at times, without great difficulty, existence of caseous masses in front of the vertebral column, at times even small abscesses still distant from the anterior abdominal wall. In the dorsal region it is not the same, and neither palpation nor careful percussion enables one to affirm the existence of an abscess. There is here, unfortunately, an anatomical fact which is inconvenient in the appreciation of the results furnished by the X-ray negative—the presence of the cardiac shadow. However, one readily learns to recognize the characteristic outline of this latter; and further, even when the cardiac and Pottic shadows are superimposed, one on the other, the shadow due to the vertebral lesion generally being the more pronounced. One is able to recognize the fusion of several vertebral bodies by the disappearance of the clear intervals corresponding to the intervertebral disks, and to see that the vertebral column is often surrounded by a more or less round or fusiform exudation which juts out from each side of the vertebral bodies. This fact is *en rapport* with that remarked by all observers occupied with the pathological anatomy of Pott's disease—that clinically a good number of patients have no abscess; while on the contrary, when one has occasion to make anatomicopathological studies one is struck to see that in reality the majority of cases of Pott's disease are accompanied by suppuration."

I may add to the remarks of Kirrisson the well-known fact that in early cervical caries it is often extremely difficult to differentiate the muscular spasm associated with this condition from that of true muscular wry-neck, and, as a last word, enter a plea for the more frequent use of the X-rays, in connection with other diagnostic methods, in one's efforts to recognize spinal caries at an early date.

MEDICAL PROGRESS.

OBSTETRICS AND GYNECOLOGY.

The Apostoli Treatment.—The value of this method of treating uterine fibroids by electricity was hotly contested in medical literature some years ago and a sufficient length of time has now elapsed to permit of dispassionate conclusions. G. B. MASSEY (*Jour. Am. Med. Ass'n*, May 21, 1904) reports the results he has obtained with the method during the last sixteen years in a total of 110 cases. Excluding nine cases where the results are unknown, the remaining patients which could be reached by various methods of inquiry, were found to exhibit 75 actual or practical cures, and 26 failures. In other words, three-quarters of the cases were successes and one-quarter failures. The latter term was made to include those cases where the patient was left in a condition the same as before treatment, and in a position to accept operative removal if necessary or desirable. In 18 instances the tumor had totally disappeared, although not all these cases were verified by the author. He concludes that we expect a cure in three-quarters of all the cases subjected to the Apostoli treatment, as attested by inquiries made from three to sixteen years after cessation of treatment. The cases that respond poorly, or not at all, are not harmed by the treatment when properly applied, and heroic measures may then be adopted with the certainty that milder ones are of no avail. Hemorrhagic and interstitial fibroids are best adapted to the method, while subperitoneal or degenerative fibroids, and those complicated with pyosalpinx are least adapted to be relieved by it. Among the author's patients there were seven deaths during the sixteen years they were under observation, and only one of these was due to the progress of the growth itself. Of the others, four died while being operated, one of an intercurrent disease and the other of septicemia.

Urea in Puerperal Eclampsia.—Since the test for albumin in pregnancy has at times proved unreliable, an estimation of the quantity of urea excreted has been generally accepted as a sure indication of threatened eclampsia. But even this has come to be regarded by some as an overrated danger signal and the favorable termination of cases where the excretion of urea was far below the normal has led to a closer study of the subject by F. S. CLARK (*Cleveland Med. Jour.*, April, 1904). In 38 cases, with a total of 140 examinations, the highest percentage of urea excreted was 2.5 per cent. and the lowest 0.2 per cent., the average being 0.99 per cent., which is low as compared with the supposed normal amount. The average in weight was 13.57 grams. With three exceptions all the cases were free from suspicious symptoms, and in only one of these did eclampsia actually come on. It seems, therefore, that a diminution in the quantity of urea excreted during pregnancy does not signify that eclampsia is threatening. For this reason, if other conditions are normal, a systematic examination for urea is of no value and cannot always be depended upon, even in cases where other conditions are abnormal. It is true that such a small number of cases would give very inaccurate conclusions if it was attempted to establish the positive value of examinations for urea, but it does not require a large number of cases to establish the negative value of this factor. The author believes that it would not be right to put patients on a strict anti-eclamptic diet, when there is no other symptom than a decrease in the quantity of urea excreted. He still thinks that the presence of albumin is the best guide

for estimating the chances of an eclamptic attack coming on, and as the quantity may be very small, he suggests making two tests of each specimen. If it is then found only in traces, a microscopical examination should be made. The tests for urea only are of value when other symptoms of intoxication are present.

Treatment of Retroversion During Pregnancy.

The chief reason why this condition requires immediate and careful treatment is that unless the displacement is corrected it may result in cystitis; ascending pyelitis and death. It is commonly said that retroversion of the gravid uterus often results in abortion. This the author, G. ERNEST HERMAN (*Brit. Med. Jour.*, April 16, 1904) disbelieves. In his opinion when the uterus has become large enough to be incarcerated under the sacral promontory, the period of abortion is passed and the danger to the patient lies not in the possible loss of her child, but in infecting herself secondarily through retained urine. Many of the retroversions which have gone on to miscarriage, have done so through rough handling in the attempt of practitioners to replace them. Busch, out of 74 cases found that in 69 the uterus spontaneously righted itself. Of these only four aborted or one in seventeen. Charles has analyzed 138 cases. In eight of these abortion was induced. In 88 the displacement was forcibly reduced, either manually or instrumentally, and in 11 of the cases abortion took place. Charles reports abortion in 37 of his 138 cases, including those which were induced. Of the 39 who spontaneously aborted, no less than 20 died. In St. Bartholomew's Hospital from 1881 to 1892, inclusive, 42 cases of pregnancy complicated by retroversion were treated. In 41 the uterus was incarcerated and was causing retention. In 25 the bladder was emptied and replaced. In ten cases the catheter was frequently used and the uterus spontaneously righted itself. The clinical side of this condition shows that the whole danger of retroversion of the gravid uterus in the fourth month comes from the tendency of the condition to cause retention of urine. The organ itself is probably not in the least injured. The one solitary treatment for the condition is the free use of the catheter. This, if used in time, is sufficient to relieve all symptoms. Keep the patient recumbent and the bladder empty, and in 90 per cent. of the cases the organ will right itself.

Primary Sarcoma of Vagina in the Adult.—Primary sarcoma of this organ is a very rare condition; this being the thirty-ninth case recorded. HENRY JELLETT (*Medical Press*, April 20, 1904) reports the case of a woman, fifty-five years of age. He believes it to be the only case on record as having occurred in Ireland. She had nine children, the last pregnancy being eleven years ago. Menopause five years before. Two years ago she noticed the occurrence of a profuse white discharge which persisted a half year and then became purulent. She lost weight and presented the usual evidences of malignant cachexia. On physical examination anteriorly a curious flap existed beneath the orifice of the urethra. The whole of the vaginal wall was profoundly involved, but the parts were remarkably insensitive. One of the small bosses at the junction of the posterior and lateral wall was removed for microscopical examination. The removal of the growth was undertaken because it was eventually shown to consist of a round-cell sarcoma. The injection at a half-dozen points of a few minims of a 1 to 5,000 solution of adrenalin rendered the operation comparatively bloodless. The urethra was then dissected out and the terminal portion removed. The

whole vagina was then completely surrounded by a circular incision and the growth was removed one-third way up the vagina. The vaginal wall was again circularly incised well above the growth and the upper and lower edges were approximated very much as in a Whitehead operation for hemorrhoids. The recovery of this patient was uneventful. The tumor proved to be an example of infiltrating sarcoma, the rarer of the two varieties met with in the vagina, the more frequent being the spindle celled. An admirable photograph of the condition is appended.

Rupture of the Uterus.—The following valuable conclusions are presented as the result of his own experience and the careful study of 50 cases reported in the literature by A. N. DORLAND (*Medicine*, June, 1904). He divides the cases into fatal untreated, expectant without operation, and those treated by operation. He believes that incomplete lacerations of the uterine wall, if the hemorrhage be moderate and the diagnosis accurate, may be well treated by careful vaginal and intrauterine tamponade. Complete lacerations with invasion of the peritoneal cavity, should, under unfavorable circumstances, such as uncleanness of locality and lack of surgical appliances, be temporarily treated by intrauterine tamponade and the administration of astringents and stimulants; the patient should then, if possible, be conveyed to some hospital and the abdominal cavity opened. Under favorable circumstances the cavity should be opened as speedily as possible and the rupture in the uterine wall sutured in suitable cases, or a Porro operation or a total extirpation be performed, according to the nature of the case. The general mortality was 24 per cent.; that with expectant treatment, 25 per cent.; and the operative treatment presented a mortality of only 16 per cent.

Rupture of the Fetal Membranes Without Terminating Pregnancy.—This accident assumes two forms the amnion alone may be ruptured and the fetus remain within its folds, or both chorion and amnion be torn and retracted from about the fetus, which then lies free in the uterine cavity. This subject has been studied by H. MEYER-RUEGG (*Zeitschr. f. Geb. u. Gyn.*, Vol. 51, No. 3) who reports two cases of this obstetrical complication. In the twelve instances of rupture of the amnion alone thus far reported, the pregnancy continued to term, but only one of the children escaped without injury, the remainder being subjected to amniotic adhesions which resulted in amputations. In fifteen cases where both membranes were ruptured, pregnancy also continued to the sixth to eighth month. In eleven cases the fetus assumed the breech position. The opening in the membranes was always small and no inflection resulted. The expansion of the chorion frondosum was less in extent than that of the serotina, and a marginal implantation of the placenta resulted. The prognosis for the child in these cases is always bad. The only reliable symptom of the condition is a hydraea, but which, during the early months, must be distinguished from the discharge due to an endometritis. No definite recommendations are made as to treatment.

Version in Primiparae with Narrow Pelvis.—In special cases where a primipara presents a flattened pelvis, P. BROESE (*Zeitschr. f. Geb. u. Gyn.*, Vol. 51, No. 3) recommends deep perineal incision extending into the cervix, followed by extraction. If version is difficult, he employs the following manual procedure. The hand is introduced between the head and the uterine wall with the volar surface turned toward the child. Strong traction is then made on the foot with

the other hand, and the head readily slides over the hand into the cavity of the uterus without boring into the cervix. He reports ten cases treated in this manner, with eight living children, the other two dying of cranial injuries shortly after birth. Other means had failed and perforation would have been indicated. The incisions are carried in the direction of the ischio-rectal fossa, on either side of the rectum toward the tuber ischii. They must be carefully repaired after extraction and in every case presented, healed by primary union, and did not interfere except in one instance with subsequent labors. The operation is distinctly limited to cases where the diagonal is at least 10 cm., otherwise abdominal section or perforation in advanced cases, is indicated.

Effect of Escharotics on the Endometrium.—A very satisfactory insight into the question as to the actual value of the application of escharotics to the interior of the uterus is afforded by the investigations of A. RIELANDER (*Zeitschr. f. Geb. u. Gyn.*, Vol. 51, No. 3). In four cases of intended hysterectomy for atheroma of the vessels producing severe hemorrhages or for retroflexion with fixation, he was able to apply the various agents some twenty-four hours previous to the radical operation and then to study the effect on the extirpated organ. He found that alcoholic solutions of a remedy are to be preferred as they are distributed more readily over the surface and penetrate to a greater degree than those of an aqueous character. Playfair's sound is sufficient for all purposes. The uterine mucosa is easily penetrated by escharotics, but the more compact muscular layers offer a marked resistance. The aqueous solutions penetrate very slowly, the alcoholic more rapidly. The application of a 30 per cent. alcoholic solution of formalin is followed by a throwing off of the scab within twenty-four hours and then the regeneration of the mucous membrane begins at once. Although the attempt was made it was impossible to affect, in any way, the mucosa of the tubes by the applications carried in on the Playfair sound, and the author doubts whether the reported cases of the latter procedure can be confirmed.

THERAPEUTICS.

Marmorek's Antituberculous Serum.—The claims of the originator of this preparation have been conservative. He states that if investigators find, as he believes he has been so fortunate as to do, that the serum does no harm in any case and in a few chosen cases enables one to ameliorate the symptoms and diminish the extent of the ravages of the disease, any physician is justified in giving the serum a trial. ARTHUR LATHAM (*Lancet*, April 9, 1904) states that he was so fortunate as to have the advantage of a visit from Dr. Marmorek on three occasions at the Brompton Hospital for Consumption, and that through his courtesy he was enabled to give the serum a rather wide trial. The technic of giving the injections defers more or less to the fancy of the patient, except that in surgical cases, it is probably advantageous to give the injection somewhere in the neighborhood of the lesion. A very excellent plan to adopt is the covering of the selected area with cyanide gauze and contenting oneself for each subsequent injection with a swabbing of the skin with some antiseptic before using the needle, too extensive preparation tending to produce a very irritating dermatitis. The author has given over 415 injections in this way without any accidents. The puncture should always be closed by collodion. The time of the injection is preferably between nine and eleven o'clock in the morning. The effects of the serum, as immediately observed, are prob-

ably attributable to the "horse" in the serum and not to the antitoxin. The idiosyncrasies of certain individuals are as marked in reaction to the preparation as they are in any other serum. The rashes differ in no way from the ordinary serum rashes. They typically occur after three or four injections. The antitoxic effects of the serum are not yet definitely proven. It is, however, already clear that the serum has its limitations. These are found prominently among the older cases, although even in this class the patients have invariably expressed themselves as feeling more comfortable from the treatment. The author concludes that the serum does produce a distinctly antitoxic effect. He believes it to be specifically curative in some of the recent and less severe forms of infection. It must not be forgotten, however, that this treatment must be carried over a long series of months in order to obtain any definite results.

A New Salicylic Acid Preparation.—The desire to put on the market a preparation of salicylic acid which is readily absorbed by the skin, has led to the manufacture of salt, an oily, insoluble fluid which is readily split up in the body into salicylic acid and borneol. P. MÜLLER (*Münch. med. Woch.*, April 12, 1904) rubs a teaspoonful of a 50 per cent. solution in olive oil twice daily over the affected spot. Muscular rheumatism, acute neuralgia, mild acute polyarthritis, acute pleurisy and acute tendovaginitis were influenced most favorably; some improvement followed in severe polyarthritis, chronic rheumatism and neuralgia and tuberculous pleurisy, while gout and erysipelas were not affected. After-effects were not noticed, but in patients with delicate skin an itching eczema sometimes appears.

Treatment of Hay Fever.—E. FINK (*Therap. Monatshefte*, April, 1904) criticizes strongly the antitoxin treatment of hay fever and looks upon this disease as a purely local process in the antrum of Highmore, caused generally by pollen. A rhinoscopic examination during an attack will invariably disclose an excessive discharge in the middle meatus and a trocar introduced into the antrum will draw off fluid. The patients are generally neurasthenics and very prone to react to slight stimulation. Secondary symptoms such as conjunctivitis and asthma are merely reflex disturbances. The most satisfactory treatment is the application of aristol directly to the mucous membrane of the antrum by means of a thin canula. Six or seven applications are usually sufficient, but it is generally advisable to repeat the treatment every season.

Treatment of Acute Articular Rheumatism.—With reference to treatment, articular rheumatism may be divided into three classes, viz., (1) where the salicylates have a prompt and permanent effect, (2) where they merely alleviate the pain and inflammation without influencing the course of the disease, and lastly where no improvement is achieved. Of the many ways of giving sodium salicylate, the one by mouth is still preferred, though gastric irritation is apt to follow and the amount of drug which actually enters the circulation is certainly small. One can hardly speak of a local action in topical applications of oil of wintergreen or the more recent mesotan, since these drugs are absorbed by the lymphatics before reaching the joint structures. Subcutaneous injections are generally too painful, but a great future is promised by F. MENDEL (*Therap. Monatshefte*, April, 1904) for the intravenous application. He uses a solution containing 8 gm. sodium salicylate, 2 gm. caffeine-sodium salicylate to 50 gm. of water and injects in amounts of 2 gm. directly into the veins at the elbow. The result was most remarkable, since in all rheumatic affection the pain and swelling disappeared almost at once, even when large internal doses of aspirin had been

without effect. After-effects were slight; occasionally trifling pain is complained of at the site of injection, or the patients experience a moderate chill. Disagreeable symptoms seen after internal use, such as vertigo, profuse perspiration, nausea or renal irritation were never noticed.

A New Mercurial Salt in Syphilis.—Hydrargyrum anilinicum.—While treating a tuberculosis patient for syphilis with sublimate compresses, FEDCHENKO (*Roussky Vrach*, No. 12, 1904) happened to obtain favorable results from an accidental admixture of anilin to the sublimate, which thus formed a new mercurial salt. It appears as a very light, downy white powder, tasteless and odorless, showing under the microscope small thin crystalline rods. Its chemical formula is $Hg(C_6H_5NH_2)_2$, thus containing 52.1 per cent. of pure mercury, or 56.3 per cent. of the oxide. It is but little soluble in water. The author used it first in an experimental way for four years, and then during the next eight years more or less extensively. It is mostly employed by him hypodermatically as per following formula:

B Hydrargyri anilini	4.0
Oleo vasel. pur. steril.	30.0
Cocaini nitrici	0.25

M. f. l. a. suspensio. Da invitri albo cum epistomio vitreo et cum collo lato. Formulam signe in eticeto.

Even when injected often and in large quantities there were observed no deleterious effects, such as abscesses or any other inflammatory condition; whatever little swelling did accompany the injection, was not of that hard and painful consistence that is met with in hypodermic injections of insoluble mercurial salts; besides the swelling disappears in a comparatively short time. Gingivitis was observed only in cases where large injections were made at the beginning without first habituating the patient's system to the drug. As regards the results of treatment, the author states that under it he caused the disappearance of syphilitic roseola during the first week of the injections, papules disappeared generally in two weeks, while the more obstinate lichen syphil. and psoriasis palm. as well as the ulcerative forms tended to yield after the fourth or fifth séance. The author advises that in cases where the patient can be placed under the full control of the physician the aniline salt of mercury is much more preferable to other salts in the treatment of syphilis. Not only is it rapidly absorbed, but it is just as rapidly excreted; thus the urine showed a mercury reaction after the second or third injection. The dose of the drug is for an average man one-fifth grain per day, beginning with one-seventh. The author also recommends the drug in a salve as well as internally in pills, and gr. $\frac{1}{4}$ in a pill; 4 to 8 or 10 to be taken every day. Patients bear the interval administration well and without any gastric disturbance. In general the drug should be employed more extensively, so that its effects might be established beyond any supposition or doubt.

Action of Alkalies on Gout.—The highly interesting article of F. BAHRMANN (*Arch. internat. de Pharmacodyn.*, Vol. 12, fasc. 5 and 6) deals with experimental gout, such as can be readily produced in chickens by feeding them exclusively on meat. The animals remain alive and sometimes even increase in weight, and after several months, characteristic deposits of urates will be found in the joints, pleura, etc. To test the action of various salts, lithium carbonate, soda, common salt and magnesium carbonates, respectively, were mixed with the food, since lithium is used freely in gout and its efficacy is contested by many. It is unfortunate that the animal invariably died shortly after this salt was given, since it apparently has toxic properties for birds. In the

animal treated with soda, a deposit of urates did not occur; the action of magnesium was less marked while sodium chloride seemed to have no effect. Quantitative analysis of the feces proved that the excretion of urates is diminished. Not because they are retained in the system, but because they are manufactured to a less degree by the body.

Action of Alkaloids of Ipecac.—P. ZEPF (*Arch. internat. de Pharmacodyn.*, Vol. 12, fasc. 5 and 6) has proven experimentally that cephaeline and emetine have the same action upon man, but the emetic action of the former is considerably stronger. Locally applied to the upper or lower portion of the alimentary tract, both alkaloids are very irritating. An improvement in appetites was never seen; on the other hand, anorexia, aggravation of already existing stomach troubles and headache were quite frequent. Nausea regularly precedes emesis and there are no advantages over the powdered root. An action upon the upper respiratory tract is undoubted and is similar to that of quillaya or senega, but the effect is so slight after oral administration that there is hardly any sense in giving ipecac in tuberculosis. Much more can be expected from gargling or inhalation. A depression of the central nervous system by both alkaloids also took place, while the action upon the heart was not studied.

A New Curative Serum for Dysentery.—Since the discovery of the specific cause of epidemic dysentery by Shiga, various attempts have been made to secure artificial immunity against this disease. L. ROSENTHAL (*Deutsche med. Woch.*, May 5, 1904) after successful experiments in immunizing rabbits and guinea-pigs, used the serum on human subjects. The serum was obtained from horses and it was found that if 0.5 c.cm. were injected into a guinea-pig the day after the infection the animal would be saved, whereas the control animal died within twenty-four hours. The serum is also antitoxic. From 20 to 40 c.cm. were administered in each case and the only after-effects noted were a slight pain at the site of injection, erythema or urticaria. Altogether 157 patients were treated, among whom there occurred eight deaths, about 4½ per cent. The usual mortality rate in the hospitals at Moscow varied from 12 to 17 per cent. In conclusion, the author claims that the serum has a favorable effect on all the subjective and objective symptoms. The pain and tenesmus becomes less at the end of twenty-four hours, blood disappears from the stools, the duration of the disease is lessened, and the chronic form seldom supervenes, and the death rate is reduced by over one-half. If the serum is administered within the first three days after the disease has begun, convalescence is rapidly established within one or two days.

Phototherapy with Fluorescent Solutions.—Very excellent results have been seen by D. JESIONEX (*Münch. med. Woch.*, May 10, 1904) from the application of fluorescent substances, such as eosin, to various skin diseases. The parts are repeatedly brushed with a 0.01 to 5 per cent. solution and then exposed to sunlight, or on cloudy days to the action of an electric arc light. The best results are obtained if the light is focused, by means of lenses, directly upon the diseased area, but to avoid excessive heat, a heat-filter containing copper sulphate and picric acid must be interposed. Artificial light is much inferior to sunlight and several cloudy days always prolong the cure. Dilute solutions are generally preferable, since stronger ones will lead to excessive crusting, especially in cancerous ulcers, which no longer permit the rays of light to penetrate. The solution may also be injected directly into the diseased tissue. At night the parts are covered with a moist dressing.

Pharmacology of Sulphur.—When sulphur is brought into intimate contact with fresh intestinal mucous membrane, sulphureted hydrogen will be formed in a short time. Boiling does not destroy this action, which is entirely independent of bacterial life. The stomach does not possess this property even when washed free of acid. A. HEFFTER (*Arch. f. exp. Path. u. Pharmak.*, Vol. 51, Nos. 2 and 3) also found sulphureted hydrogen in the expired air when he injected sulphur into the circulation of animals. This is caused by easily oxidizable albumins in the blood-cells and the organs. It is thus easily to understand why sulphur taken by way of the stomach will increase the amount of sulphuric acid in the urine.

Alkaloids of Corydalis.—Of the eight alkaloids isolated from corydalis cava, formerly much prized in medicine, corytuberin differs pharmacologically from the rest, in that it does not cause a morphia-like narcosis and cardiac depression in frogs. The remainder, F. PETERS (*Arch. f. exp. Path. u. Pharmak.*, Vol. 51, Nos. 2 and 3) divides into three groups, viz., the corydalin group with paralysis of the cord, the corycavamin group with irritation of the motor centers, the bulbocapnin group with increased reflex irritability. The first group may be allied to the morphine group, the third to the codeine group of poppy alkaloids. Therapeutically, only the bulbocapnin comes into consideration, since it may be indicated in motor irritation.

Treatment of Psoriasis.—An ointment, said to be far superior to other applications in psoriasis, is recommended by D. DREUW (*Munch. med. Woch.*, May 17, 1903). It consists of salicylic acid, ten grams, chrysarobin and oleum ruscii each twenty grams, green soap and vaseline each twenty-five grams. The alkalinity of the green soap neutralizes the irritating properties of the salicylic acid and chrysarobin, so that inflammation of the skin does not occur.

A New Hemostatic Obtained from the Spleen.—Stagnin is the name of a preparation recently introduced, which does not depend on its mode of action on the contractile power exerted on the blood vessels, as with the suprarenal extracts, but probably has the ability to influence the coagulation of the blood. The action is entirely a chemical one and local application is ineffective. It is particularly applicable to capillary hemorrhages and the author has used it successfully in a number of cases of metrorrhagia and menorrhagia. He thinks, however, that it would also be of service in other diseases accompanied by capillary hemorrhages, in the stomach, intestines or lungs. It is not recommended to supercede surgical treatment, but may be used in those cases where radical measures are not immediately indicated. The drug is an extract from the spleen of horses, obtained by antiseptic autolysis. In animal experiments there was found a reduction in blood pressure and an increase tendency of the blood to coagulate. The best way to give the remedy is by intra-muscular injections in the gluteal region. No unfavorable after-effects were reported in 59 cases of uterine hemorrhage treated with this drug. This communication was made by T. LANDAU and HIRSCH (*Berl. klin. Woch.*, May 30, 1904).

The Excretion of Strontium.—An experimental study of the paths of excretion of strontium has been made by L. B. MENDEL and H. C. THACHER (*Am. Jour. Physiol.*, April 1, 1904) with the following results: Strontium salts are eliminated to a relatively small extent only by the kidneys even after direct introduction into

the circulation. The excretion in the urine begins soon, and ceases usually within twenty-four hours. The larger portion eliminated is found in the feces, whether the introduction be per os, subcutaneously, intravenously or intraperitoneally. The place of excretion is apparently restricted to the region of the alimentary tract beyond the stomach. A functional relation to certain phenomena of intestinal peristalsis is suggested. The rate of elimination is slow, and is apparently influenced by the calcium content of the food. Strontium is found deposited in the body chiefly in the bones; traces may be met with in the liver and muscles.

The Action of Various Poisons upon the Pulmonary Circulation.—The greater and the lesser circulations possess a different degree of susceptibility to the action of various drugs, as shown by the experiments of G. MELLIN (*Skand. Archiv. f. Physiol.*, Jan. 20, 1904). Thus, ergot acts upon the pulmonary much more powerfully in raising blood-pressure than upon the systemic circulation. The author questions the desirability of administering ergot in pulmonary hemorrhages, on account of this greater effect in raising the blood-pressure. The tincture and the infusion of digitalis and frequently digitalin, as well as the tincture of strophanthus and strophanthin, which, as is well known, act powerfully on the greater circulation, produce little or no effect in the lesser circulation. Occasionally digitalin increases markedly the pressure in the lesser circulation. Amyl nitrite and nitroglycerin have no effect upon the latter. Even in minute doses adrenalin produces a powerful effect upon the systemic circulation, but produces a hardly perceptible variation in the pressure of blood in the pulmonary vessels.

Sodium Sulphite a Dangerous Food Preservative.

—A series of experiments to determine the effects of the habitual use of sodium sulphite in the food, were performed in cats by C. HARRINGTON (*Jour. of Infect. Diseases*, March 19, 1904) with results which are valuable from the standpoint of public hygiene, considering the large amount of this substance used as a food preservative. Six cats were under observation, one being a control and receiving the same weight of untreated meat. They were fed upon freshly-hashed beef, to which was added 20 per cent. of pure crystallized sodium sulphite. From the start, all six of the animals gained in weight, but about the ninth week, all except the control began to lose. At no time did any of the animals show any outward evidence of poisoning up to five months, when all were killed. On section the macroscopic appearances were negative in all respects, but microscopic examination showed a parenchymatous degeneration of the kidneys. Each showed marked fatty degeneration of the renal epithelium; and in one case there was an acute interstitial nephritis in addition to and probably dependent upon parenchymatous changes. The control cat showed no pathological changes whatever. The conclusion is drawn that at least for animals, and probably for the human subject, sodium sulphite is a dangerous admixture to food.

Radiographic Appearances in Pleurisy.—Dry pleurisy, it is easy to understand, must continue to depend for its recognition upon other than radioscopic evidence. J. F. HALLSDALLY (*Lancet*, Feb. 27, 1904) states that in pleurisy with effusion appearances vary according to the amount of fluid contained in the pleural cavity, and naturally upon the position of the patient. The greatest difficulty in the discrimination of fluid in the chest is met with in children. Here, therefore, radioscopy is of the very greatest service in giving aid to clinical signs. The chief points to note in conducting such an examination are: (1) The height of the fluid on the affected side; (2) the contour of the upper margin of

the fluid; (3) whether or not the outlines of the ribs can be distinguished; (4) the position of the heart, and (5) the movement of the diaphragm if this be visible. The conclusions that the author has reached by means of radioscopy are as follows: (a) The level of the fluid changes with the position of the patient unless the quantity of the fluid be great or it be encysted by adhesions; (b) that a purulent effusion yields the shadow of greater density than a serofibrinous effusion; (c) that the shadow is homogeneous, and in the case of serous effusion gradually increases in density from above downward; (d) that, however far the heart be displaced to the right, in most cases little alteration takes place in the position of the apex relatively to the base; (e) that other conditions being equal, the heart is displaced more when the effusion is left sided, and (f) that a somewhat triangular shadow, not normally visible, above and continuous with the shadow of the heart and pericardium is cast by the mediastinum which is displaced by the lateral pressure toward the healthy side of the thorax.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

The Glycogen Reaction in Blood.—The diagnostic import of this sign cannot be understood until the nature of the reaction itself is known. G. LOVELL GULLAND (*Brit. Med. Jour.*, April 16, 1904) states that Ehrlich described it in pus in 1883. Owing to the prominence of other blood reactions, however, it was for the moment lost sight of. But owing in part to the activities of Dunham, Locke and Cabot in America, interest in it has been revived. The method is simple. The solution which serves for fixing, staining and mounting is composed of iodine, one gram; iodine of potash, three grams; water, 100 c.c., with gum enough to make a syrup. With an oil immersion lens a film of normal blood treated with this solution gives red corpuscles stained yellow on a white or faintly yellow background. The white corpuscles are a faint lemon tint. Lymphocytes can hardly be distinguished. Eosinophiles are easily recognizable by their highly refractive granules and the polymorphonuclear neutrophils are distinguished by the darkness of their closely set granules. Masses of blood plates are often seen scattered about the films. These are the only elements in which there is normally the slightest trace of red or brown. This is typical "negative" reaction. In a "positive" reaction, the change occurs in the polymorphonuclears alone. The cells affected may give the brown color of glycogen in three ways: (1) As a diffuse coloration; (2) as fine granules scattered through the whole or part of the cell body; (3) as coarser granules or masses which are usually found at or near the periphery projecting beyond, as pseudopodia. The nature of the material so stained has been freely discussed, but there seems to be no doubt that it is not pure glycogen, but probably a combination of this with some other substance, possibly of a proteid character. From a clinical standpoint it is of great interest to recognize the condition under which this reaction may be expected. These are usually: (1) Severe disturbances of respiration; (2) anemia; (3) toxemias of metabolic origin; (4) suppuration and bacterial infection. The first three are chiefly of pathological and academic interest. Clinically the following are the chief conditions in which a "positive" reaction is constant. (a) Croupous pneumonia. Here the reaction is usually positive and intense. It often develops within ten hours of the initiative rigor. In the early hours of a central pneumonia it is of great diagnostic value.

It persists until the crisis. If it does not disappear shortly after that event, the possibility of empyema is awakened. (b) In bronchopneumonia the reaction has been found, but is rarely so well marked. (c) In empyema the reaction is always positive. (d) In abscess and gangrene of the lung; (e) in septicemia and pyemias of all kinds; (f) in all advancing suppurative processes; (g) in appendicitis and peritonitis. In 21 cases of general peritonitis from various causes reaction is always present. In abdominal cases in particular, it seems to the author to be a much more trustworthy guide than leucocytosis, for while a high leucocyte count always indicates operation, many cases of appendicitis, as is well known, either have no leucocyte increase owing to the overwhelming of the organism by the virulence of the toxemia, or else show an increase of only two or three thousand above the normal. A most important point is the period after the onset of the symptoms at which the reaction appears. Locke found it faint three hours after the perforation of a typhoid ulcer. But it was well marked in the same case six hours later. The author has found it very intense twelve hours after perforation of a gastric ulcer, and fifteen hours after the onset of symptoms in a gangrenous appendix case; also well marked an hour and a half after the onset in an inflamed appendix and peritoneum. The relation of the reaction to leucocytosis may be briefly stated thus: While many of the causes which produce the reaction also cause leucocytosis, there is no necessary connection between the two. It is well seen in the case of rhumatic fever in which leucocytosis is the rule, the glycogen reaction, however, being absent. The glycogen reaction is more valuable as a diagnostic sign because it is not, as is the leucocyte count influenced by the extremes of the conditions which produce it. It is well known that there may be no leucocyte count in an infection of low grade or one of ultra virulence. It is probably the most delicate test yet found for indicating the presence of certain pathological phenomena.

Movements of Lymphocytes.—A characteristic property of leucocytes, as distinguished from lymphocytes, is their mobility and power to emigrate. If, however, subjected to abnormal conditions, lymphocytes will also give evidence of ameboid motion. When K. WILSON and E. SEPP (*Virchow's Archiv*, Vol. 176, No. 2) heated blood to 42 to 48° C., the motions of the leucocytes became incoördinate and more than one pseudopodium was extended at the same time so that the cells often appeared very much elongated. Some of the cells became swollen and lost their vitality. The lymphocytes on the other hand were more active and at 44° they began to creep. If the temperature was reduced, the motion continued even down to 36°. If placental tissue, peptone or farina be added to blood the same changes are noticed at a lower temperature.

A New Alkaloid of Putrefaction.—By means of a complicated process, E. S. FAUST (*Arch. f. exp. Path. u. Pharmak.*, Vol. 51, Nos. 2 and 3) succeeded in isolating minimal quantities of a crystalline alkaloid, allied to cadaverine, from putrefying yeast. Injected into animals, it possesses the same action as yeast itself, hence is probably the cause of its intense toxic properties. The respiration of dogs will first be increased and deepened, repeated vomiting soon sets in and intestinal peristalsis is much stimulated. The animals seem to suffer from very severe tenesmus and soon pass pure blood. The respiration then becomes less frequent and the animals finally die in coma. At autopsy, an intense capillary hyperemia with ecchymoses, is the most prominent

feature. Emboli, however, do not occur. The action closely resembles that of arsenic.

Blood in Bilharzia Disease.—Being stationed in Egypt, A. KAUTSKY-BEY (*Zeitsch. f. klin. Med.*, Vol. 52, Nos. 3 and 4) has ample opportunity to examine the effects of bilharzia infection upon the blood. It seems that the majority of patients, even of the better classes, are affected with this disease, the most prominent symptom of which is hematuria. As a rule the anemia is not excessive and is chlorotic in type since the number of red cells is relatively high. The eosinophiles are considerably increased. In many cases ancylostomum was also found in the feces, but these cases did not seem more anemic than the uncomplicated ones. Ancylostomum infection thus plays a very subordinate rôle in the etiology of Egyptian anemia as compared with bilharzia.

Granules of Leucocytes.—It is generally stated that the neutrophile and eosinophile leucocyte of the blood, together with the mast-cells, are the only normal granulated cells. A. WOLFF (*Zeitsch. f. klin. Med.*, Vol. 52, Nos. 3 and 4) believes, however, that the lymphocytes and large mononuclear leucocytes possess distinct basophile granules which are, however, so easily dissolved out that often their vacuoles only are seen within the protoplasm. The ordinary neutrophile granules of the same person may take on different hues from blue to reddish-violet, but this is not sufficient reason to subdivide them, since, besides showing an affinity for the neutral dye, they also absorb varying amounts of the dissociated stains.

Anticrotalus Venin.—The investigation of the nature of the poison of snakes has always possessed a peculiar interest, due, in part, to the mysterious effect of an animal secretion upon other animals. This interest, which appeared to have culminated in the researches of Weir Mitchell and his followers and in the production of an antivenin by Calmette of Lyons, has been revived by the impetus of the Ehrlich theory of immunization. It is upon this latter standpoint that the reinvestigation of crotalus venom was undertaken by FLEXNER and NOGUCHI (*Jour. Med. Research.*, May, 1904), with remarkably interesting results. Their problem was to produce an anticrotalus venom. Analysis showed them that rattlesnake venom owes its toxicity chiefly to a principle which they call hemorrhagin, which acts as a specific poison, a cytotoxin on the endothelial cells of the blood-vessels. Hence, its local effect is primarily to produce profuse hemorrhage. This primary effect, coupled with other factors, such as bacterial invasion, rapidly leads to necrosis and putrefaction. In addition, however, the venom paralyzes the self-protective mechanism of the human organism—in terms of the Ehrlich conception, the venom amboceptor unite with and neutralize the human bactericidal complements. In order to produce an antivenom, two lines of procedure were tried. The attempt was made to attenuate the hemorrhagin by heat, but it was found that this modification destroys the active principle so that no antibody can be formed. The authors then determined to produce a toxoid, in other words, a molecule in which the toxicity is destroyed, while the power to set up antivenin formation in the rabbit and dog is retained. This they accomplish by subjecting the venom either to hydrochloric acid, or to the acid with pepsin, or to iodine trichloride. Thus the Ehrlich theory of toxins and toxoids proved of great practical value in obtaining a specific antivenin for the rattlesnake poison.

Complications and Degenerations of Uterine Fibromyomata.—The renewed interest which this subject has lately received, as applied to the question of

treatment, renders of value a study of 280 cases of uterine fibromata made by E. McDONALD (*Jour. Am. Med. Ass'n*, May 21, 1904) occurring during the last seven years at the Albany Hospital. An attempt has been made in this investigation to determine the frequency of the various degenerations and complications and to base on this certain conclusions concerning treatment. It appears from the study of these statistics that all fibroids which are producing symptoms, and all those designated as small (especially when subserous or intramural), should be removed, because the risk to the patient from operation is far less than that from the tumors themselves. In view of the sarcomatous changes, carcinomatous associations and complications, early removal is indicated when they are of sufficient size to produce symptoms. Small, uncomplicated tumors not producing symptoms do not require early treatment. Thorough pathological examination should be made of all fibroids for evidences of malignancy. Particular study should be devoted to those tumors which are necrotic, cystic or both, as among these are found the largest proportion of malignant changes.

Bile Capillaries of the Liver.—Under normal conditions the bile capillaries which run in the axis of a liver lobule unite to form an anastomosis of wide meshes and exhibit ampullae where they meet. The intercellular branches generally end blindly but never reach the blood vessels; the branches that enter the cells themselves also enter blindly at some distance from the nucleus without giving off branches. In simple mechanical icterus, S. ABRAMOW and A. SAMOLOWICZ (*Virchow's Archiv.*, Vol. 176, No. 2) found dilatation of the entire system up to the finest branches, which elongate and often rupture so that the bile reaches the perivascular space. This is followed by necrosis of circumscribed portions of the parenchyma. Jaundice secondary to carcinoma and atrophic cirrhosis is only a variety of mechanical jaundice. In suppurative cholangitis the walls of the bile-capillaries are destroyed, which facilitates the discharge of bile into the perivascular spaces. In chronic congestion, solid matter is precipitated in the capillaries. The bile here reaches the lymphatic system owing to the obstruction caused by these thrombi and by the periportal connective tissue; besides this a destruction of cells goes on in the center of the acini owing to pressure of the dilated blood-capillaries; this will also destroy the contained bile-capillaries so that the bile can reach the lymphatics freely from the open ends.

Technic of Widal Reaction.—The various methods of performing the Widal test has been subjected to a comparative test by A. LION (*Munch. med. Woch.*, May 24, 1904). He found the macroscopic test with living birth cultures rather uncertain, since it is difficult to obtain the proper turbidity of the fluid even if used after fourteen to twenty-four hours. Negative results were common where other methods were positive. The same observation was made when a loopful of an agar culture was rubbed up with saline solution, sometimes the agglutination was very imperfect though the case was an undoubted typhoid. Very good results were obtained with formalized cultures; they keep for a long time and enable the busy practitioner who has neither time nor facilities to reinoculate daily, to use the test. A formalized culture of typhoid plus paratyphoid has certain advantages, as it will react to either infection, though not completely so unless the serum has high agglutinating powers. Thus, in either typhoid or paratyphoid, the fluid will clear partly and on microscopical examination clumps and motile bacilli can be seen with this mixture, paratyphoid cases will no longer be over-

looked and a separate agglutination with each bacillus will decide which of the two is the cause of the clumping. The reaction with dead cultures is in every way as distinct as with live cultures, but is somewhat slower, so that the time limit must be extended beyond half an hour.

Relation of Some Other Bacteria to Typhoid.—An interesting and unique observation on the properties of some intestinal bacteria is put on record by E. ALT-SCHÜLER (*Münch. med. Woch.*, May 17, 1904). The Widal reaction in a case clinically presenting all the symptoms of typhoid was negative, but the paratyphoid bacillus type A was agglutinated in sufficiently high dilution. Blood obtained by venesection and grown on broth gave typical typhoid germs in pure culture and finally at autopsy the *Bacillus fecalis alkaligenes* alone was found in the spleen. The only way the author could explain this case was by assuming that one germ only was present but that under different conditions it acquired different properties. To prove this, typhoid germs were grown on human placenta; after several months they grew on potato and litmus whey just like the *Bacillus fecalis* and also lost their specific agglutination. A typical culture of *Bacillus fecalis* was then allowed to stand for three months, and then transplanted and tested once a week. It gradually lost its typical character, and resembled more and more the typhoid germ; finally, after having been passed through a rabbit, very high agglutination toward a control typhoid culture was obtained. The altered typhoid germ again lost its newly acquired properties after three to four weeks, but the altered fecalis still resembles the typhoid in every respect after four months. The author found the fecalis most often in the stools of typhoid convalescents, rarely in milk and water and occasionally in normal feces. Its only two characteristic properties are its growth on potato and litmus whey.

Lecithin and Snake Venoms.—It has been proved by P. KEYES (*Hoppe-Seyler's Zeitsch.*, April 9, 1904) that lecithin is the chief activator for the amoceptors of cobra poison, since the latter alone is incapable of destroying red blood cells, but in the presence of minimal amounts of lecithin is capable of doing this. The author and H. Sachs also showed that these forms of blood that were laked by apparently cobra venom alone were really acted upon by a combination of venom and lecithin, since the latter is a constituent of the red blood cells and of the plasma. Now, although all kinds of blood contain lecithin, yet only certain forms are laked by cobra poison. This apparent contradiction is explained by the fact that lecithin is not bound up to an equal degree in all forms of blood. The method by means of which one may determine the strength with which lecithin is bound up with the rest of the cell, and which will enable one to peer into the recesses of lecithin metabolism, which method is afforded by cobra venom, is indeed a novel and promising one. Thus H. Sachs has shown that while cobra venom takes the blood of fetal cows, it has no effect upon that of the adult animal. He concluded that in the former the lecithin is held in loose union and is therefore capable of eliciting the toxic properties of cobra venom. This looser union of lecithin denotes a different degree of lecithin metabolism in the fetus, fortifying the generally accepted hypothesis that lecithin takes an important part in the development and growth of the organism. The author worked with a series of different snake venoms and studied their effect upon the blood of camels, oxen, rabbits, men, and guinea pigs. The blood of the first three was not affected, and of the last two, the blood

was laked by different doses of the various poisons. These facts indicate that in different animals lecithin is bound up in varying degrees, and that in any one animal where blood is susceptible to the toxic influence of snake poison, the venoms of the different snakes have a varying avidity for the lecithin. In studying the effect of Calmette's antivenin, the author found that the protective influence of this serum varies in the same way with the different poisons and in the same order as these are capable of laking the red blood cells. These researches are valuable, apart from their own interest, for the light which they throw upon certain obscure problems in physiological chemistry, particularly upon the question of lecithin metabolism. These researches show at least that the lipoids are found in the organism, not free, but stored up in some chemical union.

The Toxic Characters of the Urine in Fatigue.—By injecting the urine of fatigued individuals into rabbits, G. ASTOLFONI and F. SOPRANA (*Arch. Ital. de Biologie*, March 24, 1904), were able to determine the variations in the toxic power of the urine under conditions of fatigue. They found that this toxicity is quite marked, and that a large part of the poisonous product elaborated in the organism during fatigue are rapidly eliminated by means of the urine, but that a small portion remains for some time in the organism. The latter fact is indicated by a miosis, which, although slight, persists for a long time, even after the other toxic properties of the urine have disappeared. These latter are seen in the marked tendency to produce convulsions, in an anti-diuresis, and in cases of prolonged fatigue, in direct fatal effects.

Histological Changes Produced by Adrenalin Chloride.—The increasing importance of adrenalin in hemorrhagic conditions and in cases of diminished blood pressure imparts a peculiar interest to the researches of W. B. DRUMMOND (*Jour. of Physiol.*, May 3, 1904). The microscopical changes produced by this drug are to be attributed to its action upon the blood-pressure and to its toxic effects. The evidence of its action upon the vascular system is a congestion of the viscera and occasionally hemorrhages and serious effusions. The congestions due to the action of adrenalin upon the blood-vessels arise from an increase in pressure in the large arteries whose arterioles do not contract, or from a rise of pressure in the large veins, which increases the pressure in the central lobules of the liver and in the convoluted tube region of the kidney. The changes in the lung may be an edema or a congestion with or without hemorrhages into the air-vesicles. If the animal lives long enough the congestion is followed by inflammation due to effused blood or microorganisms. The author believes that the inflammation is also the result of a toxic action, as evidenced by early appearance of this phenomenon and the absence of microorganisms. He also agrees with Brodie, that adrenalin acts upon the peripheral blood-vessels through the vasomotor nerves. The experiments of Brodie and the author strongly contraindicate the use of this drug for hemoptysis. The toxic influence of adrenalin is manifested in the glandular organs, principally the liver and kidney, on which it acts as a protoplasmic poison. In the kidneys the brunt of this action falls upon the cells of the convoluted tubules, and in the liver upon the cells of the central zone. The changes in the liver are of marked interest in connection with the associated fall of urea nitrogen described by Patton.

Portal of Entry of Tuberculosis.—The old theory of infection by way of the respiratory tract is no

longer tenable, according to H. VOLLAND (*Münch. med. Woch.*, May 17, 1904). The real cause of tuberculous infection is scrofulosis which is common during the second year of life, since children then learn to walk and come into intimate contact with the dirt of floors and streets. Abrasions and eruptions about the nose and mouth, the epithelial desquamation incident to teething, all form ready portals of entry. Scrofulosis is thus due to dirt, and if tubercle bacilli are also rubbed in, consumption results. Prophylaxis should thus not be directed against adults, who are, as a rule, already infected, but against children before they learn to walk. It is very doubtful if a patient, who has passed through a tuberculous infection during childhood, will possess a protective degree of immunity during later life.

Intermittent Claudication.—The typical symptoms of intermittent claudication are given by W. EAB (*Münch. med. Woch.*, May 24, 1904) as follows: Paresthesiæ and pains in the feet on walking, tension, pain and stiffness in the calves or higher up, a cold sensation, anemia or cyanosis, sometimes heat and redness of the feet, difficulty on walking so that frequent rest must be taken. The most important objective sign is absence or smallness of the pulse in several or all of the arteries of the foot, with sclerotic changes in the vessels. In atypical cases there may only be weakness without the characteristic intermissions, but the objective symptom is always present unless there is an anomalous condition of the vessels, so that the blood-supply is normally insufficient. The disease is more frequent on the left than the right side, but usually bilateral. General arteriosclerosis is common, but the heart is usually found normal. There are cases where all the typical signs are present without lesion, since due to an angiospastic condition; conversely, all four pulses may be absent without symptoms. The majority of patients are males beyond forty years, of the better classes. The etiology is that of arteriosclerosis in general, but rather often a distinct history of excessive smoking can be obtained. The treatment calls for proper diet, iodides, heart tonics, the application of warmth and galvanic foot-baths.

New Method of Testing the Heart.—In a lengthy communication recently presented to the Verein für Innere Medizin, in Berlin, M. KATZENSTEIN (*Deutsche med. Woch.*, June 2, 1904) proposes a new method for determining the functioning power of the heart, which is particularly of service when that organ is about to be subjected to the strain of a surgical operation. His procedure is based on observations made on animals that ligature of the larger arteries results in an increased cardiac activity, which is characterized by higher blood pressure, without any change in the pulse rate. This condition does not disappear until the collateral circulation is fully established, and as the resistance becomes lessened after several weeks, there is a return to normal conditions. As applied in practice, the patient is placed in a reclining position, and when thoroughly quiet, the pulse rate and blood pressure are determined. Compression of both iliac or femoral arteries is then secured and kept up for two to five minutes, and then the changes noted in blood pressure and pulse rate. In a normally acting heart, the pressure causes a rise in the column of mercury of the instrument, of from 5 to 15 mm., while the pulse rate remains the same or is slightly diminished. In case of a hypertrophied heart, a rise of from 15

to 40 mm. is noted, and the pulse remains the same or is increased. A slight insufficiency is accompanied by a pressure of 0, and a pulse rate unchanged or increased. A marked insufficiency causes a minus pressure and an increase in the pulse rate. The method has the advantage of being simple and easily applied, and excitement being the only factor which might influence the result. This must be carefully guarded against.

Thoughts Suggested by Health Department Statistics.—Although statistics are seldom accurate, yet they furnish material for valuable deductions and serve to show the trend of various diseases. G. L. PEABODY (*Med. Rec.*, June 4, 1904) points out that since 1894 there has been a constant increase in the death rate, for typhoid fever, it having risen during that time from 4.37 to 11.26 per 10,000 inhabitants. One possible cause which he suspects is the fact of the deprivation of the excellent storage system for the drinking water which has been believed to be an important factor in purifying the water. It is now known that owing to the immense consumption of water, the water comes almost directly from the water-shed, and as it is impossible to absolutely protect that immense tract from pollution one must necessarily incur certain risks. The number of deaths from malaria—90—he believes to be impossible. No doubt, the majority of these were typhoid fever. A very satisfactory showing was made in small-pox, for only five deaths occurred. In commenting upon this disease he suggests that many unnecessary hardships to private families could be avoided if the rule of removal to quarantine stations could be more leniently enforced. If vaccination protects and thorough isolation could be carried out there ought not to be any more danger from the spread of this disease than from many others.

Demineralization and Tuberculosis.—A number of French authors have stated that hypo-acidity and a reduction in the inorganic constituents of the body, decreased the resisting powers of the organism against the invasion of tuberculosis and afforded a more favorable condition for the extension of the disease. F. STEINIZ and R. WEIGERT (*Deutsche med. Woch.*, June 2, 1904) have made a series of investigations in order to substantiate this claim, if possible. They made a chemical analysis of the entire body of an infant which had died from general tuberculosis and compared the results with those already known in healthy normal infants, or in those which died as the result of other diseases. It was found that the total amount of ash obtained from the tuberculous child about equaled that from the four months' infant which had died from ordinary gastro-enteritis, and therefore no marked demineralization appeared to have occurred. Lime, phosphorus, and magnesia were found to be lessened in amount, but this the authors attribute to the presence of a rachitis which was present in the tuberculous infant, but from which the other child was free. Potassium salts were unchanged and the sodium and chlorine elements were diminished. These findings apparently show that demineralization does not occur in tuberculosis.

Gastric Hemorrhage Due to Aneurism.—A fatal case of this unusual condition is reported by H. HIERSCHFELD (*Berl. klin. Woch.*, May 30, 1904) as having occurred in a young man of twenty-eight years, who was also a hemophilic. During the course of seventeen years he had been subjected to hemorrhages from the stomach 13 times, and to the last of these he succumbed. At the autopsy the source

of the hemorrhage was seen to be a small miliary aneurism situated in the mucous membrane of the stomach, and this was surrounded by a number of varices, none of which had, however, ruptured. Evidences of an alcoholic gastritis were present, but the author thinks that the fatal bleeding would have been avoided if the man had not been a hemophilic. The latter condition also prevented surgical interference, which would otherwise have been appropriate. The diagnosis of such cases would be difficult, but aneurism might be considered whenever repeated gastric hemorrhages are present without any pain. A purpose in reporting this case was to restrict the number of so-called parenchymatous hemorrhages from the stomach, which term has been employed to cover a number of obscure conditions.

PHYSIOLOGY.

Action of the Spinal Centers Upon the Tone of the Respiratory Muscles.—Because they are brought continually into action, the respiratory muscles possess a tone which is much more marked than that of the rest of the muscular system, according to A. Mosse (*Arch. Ital. de Biologie*, March 24, 1904). The phrenic nerves exercise a tonic action upon the diaphragm. Asphyxia stimulates the nerve-cells in the spinal cord that govern the tone of the muscles concerned in breathing. These cells have an excitability of their own which is distinct from that of the other cells which innervate the muscles. When, by means of chloral, excitability is diminished and asphyxia is produced, there occurs during the pause, when the violent respirations have passed, an increase in tone of the muscles of breathing, which is followed by the final respirations. The movements which are produced during the period of augmented tone, demonstrate that the tone of the muscles is quite a different thing from the ordinary contractions, since the two functions behave differently under the same conditions. When the animal is deprived of oxygen, the tonic respiratory centers in the spinal cord cease to act a short time after the cardiac inhibitory centers have begun to be excited. When the spinal cord has been paralyzed by cocaine, locally applied, and is beginning to recover, the first phenomenon to appear is the tone of the respiratory muscles, which shows that the functions of the spinal cord recover in the inverse order to their abolition. Moreover, the respiratory tone is not a constant one, but is subject to variations, resulting from changes in the excitability of the spinal cells. The tonic cells presiding over the thoracic muscles and diaphragm are independent among themselves and have distinct locations.

Changes in the Blood at High Altitudes.—An increase in the number of red blood cells (hyperglobulia) has been observed as the result of residence at high altitudes C. Foa (*Arch. Ital. de Biologie*, March 24, 1904), finds that this condition does not occur at the height of 1,200 meters, but that at 1,800 meters there is not only a rapid increase in the red blood cells within a few days, but also an increase in hemoglobin. At 3,000 meters the hyperglobulia begins eight to nine hours after arrival or even sooner. It varies in degree with different individuals. Hemoglobin increases *pari passu* with the red blood cells. The hyperglobulia is merely peripheral, being absent in the blood of the larger arterial trunks. In experiments performed upon rabbits and guinea-pigs the author noticed that six hours after arrival at the altitude of 3,000 meters and from one to six days of residence at 4,560 meters, the bone marrow does not show,

either by its color or by its microscopical appearance, any increased hematopoiesis. The latter, however, occurs from eight to twelve days after arrival at the higher altitude. In individuals, on the tenth day of residence at high altitude, there is a slight increase in red cells and hemoglobin even in the large arterial trunks, which is the result of increased production of erythrocytes in the red bone marrow. Thirty-six hours after a return to the sea-level, the peripheral hyperglobulia has disappeared. The climatological and therapeutic applications of these researches suggest themselves.

The Causes of Peripheral Hyperglobulia at High Altitudes.—In conducting a critical and experimental research into the cause of the increase in the number of red blood cells in the peripheral circulation that ensues upon residence at high altitudes, G. Foà (*Arch. Ital. de Biologie*, March 24, 1904), finds that upon the returning of the blood to its normal condition when the individual returns to the sea-level, there is urobilinurea, which indicates that there is no destruction of red blood cells. Grawitz has sought to explain the increased erythrocytosis upon the basis of a loss of the fluid elements of the blood; but the author finds that the body actually exhales less water in a rarified atmosphere than in a normal one. The author believes that the principal erythrocytosis of high altitudes is to be attributed to a stasis of blood in the dilated superficial vessels, so that the red corpuscles, being the heaviest morphological elements, circulate least rapidly, and loiter in the capillaries.

The Behavior of Carbon Monoxide in the Organism.—The manner in which carbon monoxide is eliminated from the body is, according to P. Giacosa (*Arch. Ital. de Biologie*, Vol. 50, No. 2) not yet perfectly known. It has been found that in an animal which has survived intoxication, however severe, after a variable period of time, the blood does not contain carbon monoxide hemoglobin. This disappearance does not take place if the blood after removal from the body is hermetically sealed, or if it be allowed to remain in the cadaver; the disappearance of this compound is therefore bound up with phenomena connected with life. The author was able to prove that CO hemoglobin decomposes when exposed to the air for a long time. The question arises whether carbon monoxide leaves the blood without suffering any change, or whether it is oxidized into carbon dioxide. Has the living organism the power to oxidize the molecule CO into CO₂. The prevailing opinion has been that the latter is the case. Experiments have been conducted to determine whether the disappearance of CO Hemoglobin from the blood is associated with the appearance of CO in the expired air, and the results of various investigations have been contradictory. On this subject the author performed certain preliminary experiments. He found that the blood obtained from an intoxicated animal, or healthy blood which has been impregnated with CO, and then defibrinated in either case, if kept in test tubes in a water-bath at a temperature of 38° C., gives off CO for several hours, at first with intensity, which diminishes until at the end of fifteen or sixteen hours there is not a trace of CO in the air emanating from the surface of the blood. The author then studied the possible effect of fresh pulmonary tissue upon this liberation of CO. At first this is retarded, but later on there is an increased elimination of CO. Moreover, the blood containing pieces of lung becomes cloudy, and putrefies after a number of hours, while the plain blood does not putrefy. The author now performed an experiment to see if CO₂ may be produced in the blood at the expense of CO. He found

that blood containing carbon monoxide and pieces of lung produced more carbon dioxide than either healthy blood with pieces of lung, or blood with carbon monoxide alone. This result proves that CO is really oxidized into CO₂. The author revealed a further fact, which may possibly be of service in the treatment of cases of carbon monoxide poisoning, namely, oxygen, particularly at an elevated pressure, facilitates the dissociation of and expels from the blood every trace of carbon monoxide.

SURGERY.

Treatment of Fractures.—In order to avoid the difficulties and uncertainties of the bloodless reduction of the fragments in a fracture of the lower end of the humerus, P. NIEHANS (*Archiv f. klin. Chir.*, Vol. 73, No. 1) proposes the temporary fixation of the fragments with steel nails. He has found the procedure of particular value in children. The operation consists of an exposure of the parts which is secured by reflecting backward, the mass of extensor muscles together with the olecranon process, which has been temporarily resected. The fragments are then brought into apposition and held in place by two steel nails, of a square form and nickelplated. The latter may again be removed in from four to seven days. The fragments will have become sufficiently united to permit fixation of the arm in an ordinary sterile dressing. The osteoplastic ulnar flap heals like any other sutured olecranon fracture. The writer has also treated in a like fashion, fractures of the greater tubercle and the head of the humerus. Six successful cases are reported, and it is suggested that the method might also be applied to condylar fractures in the knee-joint, fractures of the tibia, astragalus, etc.

Appendicitis and Inguinal Hernia.—An interesting study is presented by M. A. WASSILJEV (*Archiv f. klin. Chir.*, Vol. 13, No. 1) of 63 cases of appendicitis which have developed in the hernial sac in males. He reports in detail his own case, the others are gathered from the literature. Infancy and old age offer the main predisposition to the condition. This form of appendicitis may assume the acute or the chronic type. The acute form rarely runs such a stormy course as that in the free abdominal cavity, and even where perforation has taken place, it often assumes the subacute form. The diagnosis is almost impossible to make, but the prognosis is more favorable than for the condition in the abdomen. The operative treatment must be directed toward both conditions, but the corrective treatment of the hernia itself depends more or less on attendant circumstances. In 39 cases where resection of the appendix was done, there were only three deaths, while in 18 cases where this was omitted, ten deaths occurred. An endeavor should be made to save the testicle, but in chronic cases with much tumefaction castration must be resorted to.

External Luxation of the Knee.—If one should judge by the number of reported cases, this lesion must be looked upon as an exceedingly rare one. VAUTRIN (*Rev. de Chir.*, April, 1904), states that in his opinion external luxation is more common than ordinarily supposed. If this be true, the frequent complication of the lesion by tearing of the external popliteal nerve renders the lesion of very considerable surgical importance. The author states clearly that he does not refer to external dislocations of the knee, which must, in the nature of affairs, be produced by profound traumatism. It is the milder forms, the luxations proper, which he discusses. In reading the old observations of Malgaigne, Hamilton and Claudot one reaches exactly the same conclusions, viz., that this form of traumatism is accom-

panied by an almost infinite variation in the degree of traumatism both to the soft and to the hard parts, that sometimes reduction is remarkably easy, sometimes impossible without an anesthetic; that immobilization after reduction does not justify one in counting upon complete functional success; that, all in all, no conclusions as to the degree of internal injury can be reached with the ease or difficulty by which reduction has been accomplished. It is a mistake to believe that cure lies entirely in the reestablishment of the ligamentous portions of the joint. The restoration of the crucial ligaments or the attachment of the cartilages does not always depend upon a prolonged immobilization. This serves to add importance to the question whether one should or should not immobilize the parts for a long time. Since so little of the actual conditions prevailing in the joint can be determined from physical examination, obviously no dogmatic conclusions can possibly be reached which will apply to this form of injuries. The luxation of the fibula is one of the most important considerations in determining the treatment, because of the anatomical relation of the external popliteal nerve to the head of this bone. The duration of immobilization varies, of course, with the gravity of the case. If the fibula has remained in place, three weeks will usually accomplish all that may be necessary. But should this immobilization be blindly conducted, the dangers attending it are possible ankylosis and loss of invaluable time, which might have been devoted to the remedy of nerve defects had such been ascertained by open incision and repaired at the time of replacement. The injury to the hard parts is often complicated by repairing of the vascular supply of the joint. Although the destruction of the veins is of serious import, it does not compare in gravity with the rupture of the artery. This, as is well known, results always in a traumatic aneurism which often terminates in gangrene. The injury to the nerves has been but slightly touched upon by surgical authors. Eames has reported a single case which was complicated by complete paralysis of the anterior tibial nerve resulting from an anterior luxation of the knee with fracture of the tibia. The author then cites the history of a case of a young soldier, who in jumping on a tank court, twisted his knee, luxating it externally. He was unable to see the patient until twenty-four hours was passed. The fibula was also dislocated. Disability was complete. Pain was marked over the popliteal space, but both the popliteal and the tibial arteries pulsed normally. Under chloroform anesthesia the luxation was reduced without trouble. The injured member was immediately immobilized in complete extension. Very shortly after the replacement, it was noticed that all muscles were paralyzed, which were supplied by the external popliteal nerve. Sensation of the perineal region was also almost nil. It was thought at first that this was due to a simple compression, but after a few days it was found that despite the subsidence of the hematoma, the paralysis remained. Electricity, massage and all forms of treatment were resorted to, but for three months there was no change. Walking became very difficult. The point of the foot was dropped, unusual motions of the body being necessary to raise the member in stepping forward. Operation was advised, but was refused. It is not surprising that the external popliteal nerve should be torn if the external ligaments are ruptured. Indeed, the anatomical arrangements of the parts are such that it seems difficult to believe that any extensive ligamentous tearing may take place without corresponding injury to this nerve. The author therefore advises that in all these cases the nerve should be freely exposed and sutured if necessary.

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SPECIFICITY IN BACTERIOLOGY.

AMONG the many important contributions of Koch, there are few which have had a more notable influence in the development of bacteriology than his theory of the specificity of micro-organisms. Men have come to regard this theory as almost an axiom of biology, and thus underestimate the tremendous advance which it marked in the progress of medicine. That bacteria are definite species, with definite biological and, under given conditions, definite pathogenic characters, seems to be a fact so self-evident that those who would doubt it carry the burden of disproof.

Not so in the sixties and seventies of the preceding century. At that time the theory of Pettenkofer in Munich was dominant, who held that in the bacterial world there was no fixity of specificity, either from a biological or a pathogenic standpoint. It was then commonly taught that harmless micro-organisms might, by a period of sojourn in a proper environment, become endowed with the virulence of a typhoid or a cholera germ; the fixed quantity in the etiology of disease was the soil, not the germ. All this was changed by Koch, and, with it, the etiology of modern medicine.

Many onslaughts have been made on this

theory, and it has weathered them all. Experimental work has revealed the fact that there is hardly a characteristic of the bacteria which cannot, by artificial conditions, be markedly altered; reducing forms may be made non-reducing, sugar-fermenting forms trained not to ferment, and pathogenic traits may be "attenuated" out of existence. And yet these striking metamorphoses have evinced themselves as nothing but masks, as a change of complexion, under which lay concealed the original type in its pristine character.

Nevertheless, it may now truly be said that the fate of the theory has become seriously imperiled. The story is not a very long one. In October, of 1903, a case of a supposedly typhoid infection appeared in the wards of the Naunyn clinic in Strassburg. As is the practice in that clinic, the agglutinating reactions were immediately tested with formalin emulsions of the typhoid, paratyphoid A, and paratyphoid B, stems. It was found that the reaction was marked for the paratyphoid A, and weak for the others. With the view of further investigating this rare disease, paratyphoid blood cultures were taken. To the great surprise of the bacteriologists, not paratyphoid A, but typhoid bacteria were grown from the blood. This, however, was not all. The patient died, and from an abscess of the spleen a pure culture of a third species, *B. faecalis alkaligenes*, was grown. Here was a problem: Was the case one of a triple mixed infection? Or was it a case of heteromorphism of one and the same organism? The latter hypothesis has been exploited by one of the assistants of the imperial typhoid commission in Strassburg, and with truly remarkable results. He discovered that by growing typhoid bacteria over many months on sterile placenta, he could change its biological characters to such an extent that it became indistinguishable from *B. faecalis alkaligenes*, while, on the other hand, the latter organism could by other manipulations, the details of which must be sought in the original, be transformed into an apparently genuine typhoid form.

Was there here a true or only an apparent and superficial metamorphosis? There are still other tests, which are commonly believed to be far more crucial and distinctive of a micro-organism than its biological characters, namely its pathogenicity and, in still higher degree, its agglutination reaction. The altered forms, or "sports," should be examined by these criteria. And here is the crowning detail of the entire research—the bacillus of typhoid had lost enormously in its patho-

genicity and in its susceptibility to immune serum, and the *fæcalis* had gained in a corresponding degree. Apparently the typhoid had become a *fæcalis*, and vice versa. There is no other way of describing the results.

This is the most striking and clear-cut contribution which has ever been made to the problem, but it does not stand alone. There is a constantly increasing fund of data which goes to show that biological characters, pathogenicity, and agglutinability of any form may be considerably altered by external factors, and that, having been so altered, they may retain their new characteristics as fixed traits apparently over indefinite periods of time. Especially noteworthy are such researches as that of Buxton and Vaughan, which demonstrate a high degree of instability in the agglutinating function, and its permanent reducibility in the typhoid germ. The evident trend of all these currents is towards a reversal, or a modification, of the theory of bacterial specificity as advanced by Koch. To go no further than the typhoid problem, it becomes pertinent to inquire whether every sporadic case of typhoid must necessarily be supposed to have derived the contagium vivum from a previous case. As Altschüler suggests, it is at least imaginable that that ordinarily harmless denizen of the gut, the *B. fæcalis alkaligenes*, may under circumstances of growth, not as yet understood, become pathogenic—become, in fact, a paratyphoid or a typhoid organism. The hypothesis five years ago would have seemed worse than heretical, but seems now almost unavoidable. And if this be admissible, it seems pertinent to inquire into the status of the pseudo-diphtheria bacilli, the pseudo-tubercle forms, and a vast number of other organisms, and their relation to the so-called "true" agents which they simulate. All this is, indeed, very hypothetical, and very unorthodox, but it is at the end of the vista which has been revealed by the researches of the past few years.

A MODERN DIDO.

PSYCHOLOGISTS teach us now that crime, like disease, comes in epidemics, and that waves of deviation from the normal standard are apt to sweep communities at stated times and intervals. Some particular form of depravity or mental aberration becomes rampant, and from its frequent occurrence attracts widespread attention, only to subside as some other manifestations of "undivulged crime, unwhipped of justice," takes its place.

Thus the public mind, particularly that of the professional reformer, is led to the erroneous conclusion that mankind is degenerating and that there is now little to be saved from what Addison was pleased to term the wreck of matter and the crash of worlds.

The latest illustration of the contagiousness of a bad example may be found in the number of deaths, by suicide, that have been reported in the newspapers from all parts of the country. Now suicide is not a new development and it has existed from time immemorial in all countries and among every condition of men. At least three European monarchs are known to have taken their own lives during the last hundred years, one of whom, the late Sultan of Turkey, Abdul Assiz, became Abdul As-*was*, through the medium of a convenient pair of scissors. Added to these are at least a dozen princes of the blood, the more prominent of whom perhaps was Prince Gaston of Bourbon, the son of the late King of Naples, who was married to the Infanta Isabella of Spain, and who cut his throat in the presence of his wife. Other notable instances of self-destruction are those of Gen. Sir Hector MacDonald, the late Duke of Bedford; Count Wolkenstein, the Chamberlain of the Court of Vienna; the Marquis of Londonderry, the Earl of Munster, the Spanish Duke of San Carlos, Grand Chamberlain to King Alphonso; the Marquis Rappolo, stepfather to Queen Marguerite of Italy, Baron Bruck, the Austrian cabinet minister, and others too numerous to mention. The saddest case of all perhaps was that of gallant old General Bourbaki, one of the greatest heroes of the Franco-German war of 1870, who attempted to blow his brains out when the raw and untrained conscripts intrusted to his command fled *en masse* across the Swiss frontier. Luckily he recovered from the severe self-inflicted wound and lived for many years, as his biographer states, honored both at home and abroad as a particularly gallant and splendid specimen of the old French soldier.

Up to the present time, however, the inhabitants of the United States seem to have found their lot a happier one than the subjects of the European Powers, though if the reports in the newspapers can be trusted, we seem now to be running them a very close second. Thus we have had more than one case of hara-kiri, with a strict adherence to all the details of the Orient. While the "happy despatch" has been busy with the unhappy denizens of the Mongolian wash-house districts. Even the naval service of the

United States has not proved exempt, and the rule of three was sadly exemplified in the ward-room of one government ship alone.

We have had deaths by drowning, by the use of the pistol, with the poisoned cup, by cold steel, and now, as a culmination, we are brought face to face with the self-attempted taking off of Mrs. Sarah Montgomery, of Elton, Ind.

Mrs. Montgomery was a woman, and, therefore, to be wooed, and, having been won by love's insidious charms she seems to have been possessed of its sweet unrest to a degree to change its rosy hues to the jaundiced green of jealousy, and being no longer able to fear the ills she had she determined to fly—or rather steam—to those she knew not of.

But the conventional methods of suicide must have seemed to her commonplace and out of date, for in her attempt to shuffle off this mortal coil she did not follow suit, but trumped in with an originality that was all her own. Procuring a quart of gasolene she quaffed it at a single draught, and then applying a lighted match to her vapor-laden breath she surrendered herself to a Didonian, but an internal pyre of flame.

That she was sadly hurt is only natural, but let us hope that the one fire will burn out the others burning, and that when she emerges from a speedy convalescence that she will have forgotten the incendiary spark from which so great a conflagration came. At all events she can console herself in this, the hour of her affliction, with the comforting realization that she, too, has established a "record" and one that she is likely to hold in unchallenged security, of being the first and only person to make a practical, if unsuccessful, attempt to fire off the cannon that Hamlet tells us the Everlasting has fixed against self-slaughter.

ECHOES AND NEWS.

NEW YORK.

Dentition and Epilepsy.—Dr. Wm. P. Spratling, Superintendent of Craig Colony, Sonyea, N. Y., is anxious to collect information bearing on the influence of the first dentition periods, from the 6th month to the end of the first year, on the production of convulsive seizures, epileptic and non-epileptic.

Beth Israel Training School.—The graduating exercises of the nurses of this school were held in Clinton Hall July 12, 1904.

Tuberculosis Hospital on North Brother Island.—Health Commissioner Darlington has advertised for bids for the building of a "rest cure pavilion" on North Brother Island. The pavilion is needed as an adjunct to the hospital for consumptives which has been established on North Brother Island.

Pneumonia Investigation and Prophylaxis.—The Board of Estimate appropriated \$10,000 last week to pay the expenses of a commission of medical experts to pass on the question whether or not pneumonia is a contagious disease. The appropriation was asked for by Health Commissioner Darlington, who showed that, although pneumonia is generally regarded as a complaint only prevalent in the winter, the number of deaths from this cause have been unusually numerous this year, and the cases have also been confined to particular localities. The inference Dr. Darlington has drawn from his observations is that the disease may be contagious. Before going to the expense of disinfecting houses in which deaths from pneumonia occur, however, Dr. Darlington suggests that an expert commission be appointed to study acute lung diseases, and especially pneumonia, with a view to ascertaining how such diseases are communicable.

Summer Corps Work in Brooklyn.—Officials of the Health Department in Brooklyn are making a determined effort to decrease the mortality among infants in that borough this summer. Nineteen physicians have been placed on the summer corps of medical inspectors, which is nearly twice the number ever before employed. Particular attention is being paid to the milk supply. Last week the inspectors started out to test all the milk that is being offered for sale in the stores. Their orders were to take the temperature of the milk, and if it is above sixty degrees it is to be condemned. The cans are to be hermetically sealed, the Health Office notified, and the permits to sell milk will be cancelled at once. Dr. E. P. Harman has been placed in charge of the summer corps, and he has apportioned the men so that the crowded sections of the borough, where the infant mortality is the greatest, will receive the most attention. Seven nurses have been assigned to this part of the work, and the mothers will be instructed how to feed and dress the small children during the warm weather. Impure and improperly cared-for milk is believed to be the greatest cause of death, and for this reason particular attention will be paid to the milk supply. The milk will be tested at frequent intervals and special precautions will be taken during the exceedingly hot weather. It was for the purpose of making this part of the work more thorough than it has ever been before that the medical inspectors who had been employed in the schools were kept at work during the summer months.

PHILADELPHIA.

Improvements at Hospitals.—Extensive improvements are soon to be made at both the Presbyterian and German hospitals. At the former will be erected a four-story brick maternity building; the latter will make alterations and additions costing \$20,000.

Sale of Liquor by Druggists.—The internal revenue collector in this city, in answer to complaints, has received word from the federal authorities that it is a misdemeanor for Druggists to sell spirituous liquors as such, without adding anything to make of them a medicine. The complaint originated from the selling of whiskey and the like on Sunday. Wholesale druggists believe the federal government has no right to interfere with druggists who are allowed by the state to sell pints of whiskey on physicians' prescriptions.

Relatives to Support Insane.—Philadelphia has made a move in the effort to compel certain persons to support at the Norristown asylum friends or relatives who have hitherto been supported by the city. Twenty-one persons have been summoned to court on July 26 and many other cases are being investigated. It has recently been found that the city is paying thousands

of dollars that should be paid by those who are fully able to do so.

Filtered Water for West Philadelphia.—It is announced that in four weeks every part of West Philadelphia will be furnished filtered water. For some time past that part of the city has been receiving a mixed supply.

CHICAGO.

Appointment of Dr. Croftan.—Dr. Alfred C. Croftan has been appointed physician-in-chief to St. Mary's Hospital; and Dr. A. J. Ochsner, surgeon-in-chief.

Fatalities Due to Lockjaw.—There have been seven deaths reported to Coroner Traeger as the result of accidents sustained on the Fourth of July by celebrators. All of these cases of tetanus were attended by much suffering.

Reduced Infantile Mortality.—To save the lives of the children of Chicago's poor, the Milk Commission of the Children's Hospital Aid Society has begun its summer campaign. Through the work of the Commission last year in supplying pure milk and educating mothers to give their babies proper diet during the hot months, the infantile death rate was reduced, and this year the work of this new philanthropy will be carried on with greater energy and upon a larger scale. The coming of Dr. Lorenz to Chicago first called public attention to the fact that comparatively little was being done for the sick and crippled children of Chicago. A public call sent out from the Chicago Woman's Club resulted in the organization of the Children's Hospital Aid Society, which was incorporated in January, 1903. Distribution of 223,200 gallons of milk was the great work accomplished last summer between July and November, and this with only six persons paid for their services. Strained, filtered, Pasteurized, sealed in bottles and distributed to thirty-five stations maintained throughout the city, and all done within twelve hours from the time the milk is furnished by the Jersey herds in Wisconsin, this systematic charity work presents features of organization more complete than evidenced in any other undertaking for the benefit of the city's poor. The milk is sold in various modifications, the aim being to render it in all cases as near the strength of mother's milk as possible. Modification No. 1 is suited to young babies, with an increasing strength ratio up to the whole milk, suitable for older children, adult typhoid fever patients, or other invalids desiring and needing a fresh, pure, wholesome milk. The charges made for the modifications are all nominal and very low. Modification No. 1 sells, in a three-ounce bottle, sufficient for a single feeding of a young child, for one cent. No. 2 comes in a six-ounce bottle for 2 cents. No. 3 has a similar valuation. An eight-ounce bottle of No. 4 calls for a payment of 3 cents, and No. 5 costs the same.

Work of Children's Aid.—The first work undertaken by the Children's Hospital Aid Society was a thorough investigation of Chicago's facilities for caring for sick and crippled children. It was found that out of the 27 city hospitals visited, children's wards were maintained in only 18; the total of 320 beds thus furnished included the resources of the Home for Destitute Crippled Children. Only one Chicago hospital, the Maurice Porter, is devoted exclusively to children, and the only two places of refuge for children afflicted with infectious diseases may be found in the Memorial Institute, maintained in connection with the Presbyterian Hospital by Mr. and Mrs. Harold F. McCormick, and the City Smallpox Hospital at Dunning. Children suffering from infectious diseases must still be sent to Cook County Hospital or to the Dunning Infirmary

unless eligible for one of the ten beds, exclusively retained for scarlet fever patients, of the Memorial Institute. The work of the Children's Hospital Aid Society during its first year and a half has resulted in greatly improved conditions, and in all hospitals at present maintaining no children's wards the little ones are to be received shortly. Eight old-fashioned and not altogether perfect wards in other hospitals are to be rebuilt or replaced by the pavilion system.

Officers and Directors.—The officers and directors of the Society are: President, Dr. Frank Billings; Vice-President, Mrs. Geo. W. Plummer; Secretary, Mrs. Harold F. McCormick; Treasurer, Mr. E. T. Keith; Directors, Drs. John Ridlon, and W. S. Christopher, Judge O. N. Carter, Mrs. W. P. Henneberry, and Mr. Medill McCormick. The Milk Commission is headed by E. P. Bicknell, of the Chicago Bureau of Charities, with Mrs. George M. Moulton as managing director, and Dr. Frank Billings, Miss Fulmer, Dr. Isaac A. Abt, Mrs. Geo. W. Plummer, and Mr. Medill McCormick to complete the Committee.

Hospital for Children.—Some time in the near future the Society hopes that a special hospital for children, with long-needed improvements in the facilities for treatment of chronic child invalids, crippled and mentally defective children, and public school children in need of the eyeglasses their parents lack means to provide, may be brought into existence in Chicago. But for the present its efforts are generally directed to ameliorating prevailing conditions. The education of the poorer portion of the public must come first of all, in the opinion of those who know whereof they speak.

Chicago Milk.—During a period of about two months covered by his reports, Professor Jordan, of the Bacteriological Department of the University of Chicago, found that about 31 per cent. of the 291 samples of milk examined by him were below the city standard in respect of total solids. During the same period the findings of the Municipal Laboratory indicated a quality of milk just about four times as good. The *Chicago Tribune*, in commenting on the milk question, has this to say: "Were the city inspectors four times as fortunate in the samples of milk which they happened to collect? Was Professor Jordan four times as rigid in the use of alkaline tablets, nutrient gelatines, and Quevenne lactometers? Or does the habit still survive among the city inspectors of taking a pleasant little morning drive in their municipal buggies along the boulevards, and of incidentally picking up a few samples of the superior kind of milk which is served to boulevard customers? Whichever of these questions may touch the right spot, it remains true that a discrepancy exists which, out of regard for the health of Chicago, ought to be explained. Is our milk as rich as the city inspectors think, or is it as thin as Professor Jordan's laboratory indicates? And, further, should not the city, as soon as it can afford to do so, provide for an inspection of milk not only with regard to its percentage of total solids, thereby establishing its nutritive value, but also with regard to its bacterial inhabitants, to prevent the spread of disease through milk."

Milk Fund Too Small.—Bacteriological tests of milk are made as regularly as possible with a small staff of inspectors and bacteriologists, according to Health Commissioner Reynolds, who thinks the Health Sanitation Committee of the Civic Federation, in its recent criticism should have taken into account the small appropriation for inspection. The Committee secured tests of 291 samples in two months, and found many of them below grade with regard to butter fat and solids. That four times as much milk escapes supervision as is tested is considered an exaggeration when

based on the investigation of 291 samples, but Dr. Reynolds considers that some milk is bound to escape the inspectors because of the small staff of men given him to work in conjunction with the City Laboratory.

Pamphlet on Tuberculosis.—The Illinois State Board of Health recently issued a pamphlet written especially for the laity, and intended for distribution broadcast, in which consumption is described, its ravages clearly pointed out, and rules for its prevention and limitation of its spread detailed. The State Board of Health announces that it will make free examinations of sputa in needy cases.

GENERAL.

Honor for Dr. Osler.—Dr. William Osler was one of the four who received the degree of LL. D. at Harvard this year. President Eliot pronounced him "the leading medical consultant author, teacher and orator of this continent."

Cholera Epidemic in Persia.—There is an epidemic of cholera in Teheran, Persia, according to a dispatch from there on July 8. The deaths number several hundreds daily.

X-rays in Leucemia.—A dispatch from Turin dated July 11 states that Dr. Bozzoli, director of clinical medicine at the Turin University, has informed the Academy of Medicine that experiments he has made have shown that the X-rays have remarkable efficacy in some serious diseases of the blood. He says that he has cured by this means a supposedly incurable case of leucemia.

Model Field Hospital.—The army hospital detail which left Washington a few days ago for Gettysburg to participate in the encampment of the National Guard of Pennsylvania, is a thoroughly equipped outfit. The detail consists of ninety-two men, including two officers, and is intended to serve for educational purposes. The company took a model field hospital of 108 beds, which will be set up at Gettysburg. It includes operating rooms, laboratory, diet kitchen, and acetylene gas plant for illumination, and all its departments and rooms will be connected by electric bells. It is said to be the most complete field hospital ever erected, and its demonstrations will be of great service to the medical officers of the National Guard. The hospital is in charge of Assistant Surgeons H. L. Gilchrist and Charles B. Reynolds.

Morristown, N. J., Medical Society.—At a meeting of this society July 16, some definite action was taken relative to payment for professional services. One of the members present is quoted as saying: "I want it especially impressed on the people that we are going to have a blacklist, and those persons who do not pay their medical bills will have no attention paid to their calls for aid. This is merely a matter of protection. There are many persons who call in a different physician every time a case of sickness occurs, and never pay any bill. That is not right. Those who want medical attendance should be willing to pay for it, and if they will not pay willingly, then they should be made to pay. Our list will put a stop to most of the dead-beat business." Dr. H. M. O'Reilly is President of the society.

New Jersey State Medical Licentiate.—At the meeting of the State Board of Medical Examiners held at Long Branch, July 5th, the following candidates for a State medical license, who passed the examination at Trenton on June 21-22, were licensed: Edward John Beardsley, David Fuller Bentley, Norman Sinclair Betts, Louis Nicholas Blank, Guy Otis Brewster, Frank Halstead Brown, Hayes Joseph Burnett, Charles Lawrence Constantinides, Frank Bacon Cook, Henry Augustus Craig, Percy Edward Deckard, Lawrence Daniel

Doyle, Lancelot Ely, James Ferrier, Albert Ferdinand Garton, Samuel Greenburg, Isaac Norwood Griscom, Kenneth Sylvan Guthrie, Clement Jacob Hailperin, Harvey Whesley Hartman, Walter P. Evans, Ephraim Clark, Charles Albert Knox, William Paul Lamb, Charles Jacob Larkey, John Joseph Magner, Harry Ross North, Harry Zebulon O'Brien, Homer Tomlinson Partree, Frederick Marshall Paul, Charles Blaine Piper, Henry Stanley Riddle, William Frederick Ridgway, Joseph Potter Riggs, Walter H. Smith, Lester Hevlyn Sparks, Newton Henry Stein, Louise Martha Sturtevant, Walter Albert Taylor, Henry Woodbridge Thayer, William H. Wells, Stephen S. P. Wetmore, Herbert Willis. The following attained the Honor Roll, or a general average of 90 and upwards: Dr. Louise Martha Sturtevant, A.B. of Wellesley, and M.D. of Boston University School of Medicine, attained 91.6; and Dr. Henry Augustus Craig, M.D., of Columbia University, attained 90.7. The following officers were elected for the ensuing year: President, Dr. William H. Shippis, Bordentown; Secretary, Dr. E. L. B. Godfrey, Camden; Treasurer, Dr. Chas. A. Groves.

Race Suicide and Education.—Under caption of the "College Girl and Race Suicide" the *Sw* speaks editorially on the contention that college women do not marry. It says: "The college girls, or rather former college girls, of the country are up in arms. They resent in particular the statement made recently in a New York medical journal to the effect that American women are too highly educated; that it is because of this that they are failures from the point of view of maternity, and, finally, that 'as women's mental powers increase, their bodily powers decrease.' It is obvious that the case that certain persons try to make out against the college women in particular must fall to the ground if it can be shown that a larger proportion of them are healthy, marry and have families than is the case with their sisters who never went near Vassar, Wellesley, Bryn Mawr, Barnard or Radcliffe. It would be no more absurd to attribute the low average birth rate of Kalamazoo or Oshkosh, if they have a low birth rate, to the fact that the owners of apartment houses in Manhattan and Brooklyn don't like tenants with children, than it is to say that the reason women who have never been to college don't have large families is because Greek and mathematics and modern science have knocked thoughts of marriage out of the heads of some college women. The fact remains that the average college woman is just as feminine as her sister, and if she is just as feminine she cannot be without the tendency to regard man, not as an enemy, a negligible quantity or an inferior animal, but as something very much more important than a necessary evil."

To Keep Mosquitoes Out.—In carrying out its plans for the sanitation of the Panama Canal Zone the Isthmian Canal Commission will shortly advertise for bids for 100,000 yards of wire netting with which to screen the various buildings along the line of the canal, so as to protect the officials and employees from the mosquitoes, which carry yellow and malarial fever. This will be probably the largest single order of wire screening ever placed. Experience has shown that ordinary wire screens do not last more than six months in that moist climate, and Gov. Davis of the Canal Zone has recommended the use of galvanized steel, brass or copper wire, which will be much more durable. The work of sanitation now going on under the direction of Dr. Gorgas includes not only a general cleaning up of the towns and villages, but a systematic anti-mosquito crusade. Ponds and pools of standing water are being covered with kerosene, etc. Work has also begun on the drainage of swamps and like mosquito breeding places

in the zone, which will require something like a year to complete. So far there have been but few cases of yellow fever and but one American has died from the disease.

Professor Koch and the Royal Commission.—The *SW* expresses its views on this subject as follows: The question whether or not tuberculosis can be transmitted from animals to man is obviously of immense importance to all those interested in the question of public health, especially in the great cities. Prof. Robert Koch, who succeeded Virchow as member of the Berlin Academy of Science and who has been for some time director of the Prussian Institute for Infectious Diseases, is the leading authority in Germany to take the negative view. He holds that there is no connection between human and animal tuberculosis. Some time ago the Prussian Government appointed a Royal Commission to inquire into the subject. When its interim report was published the other day Prof. Koch was absent from Berlin. The experiments carried on by order of the Minister for Public Instruction seem to have been inconclusive. Prof. von Orth, Virchow's successor in the chair of pathology at Berlin University, holds that they tend to make out a case against the Koch theory. On the other hand, all the other authorities in Berlin take the opposite view and consider that Koch's position is impregnable. On his return to the capital Prof. Koch announced that the report confirmed him in his original position. He took the opportunity to restate his conclusions as follows: that the transmission of bovine tuberculosis to man cannot take place by means of food; that neither bovine flesh nor milk can transfer the disease; that it was possible for a butcher at the slaughter houses to become infected by injuring himself when handling tuberculous meat, but even then the infection remained local and caused no general disease. With regard to the report of the Royal Commission, he said, emphatically: "It does not contain a single fact to make me change my opinion, which is based on very careful experiments, not only made by myself and my assistants, but also by other medical men of the highest standing. It is for my opponents to prove that I am wrong. I have tried for years to find a case in which tuberculosis was transferred from animals to men. Three years ago the Prussian Minister for Public Instruction, at my request, instructed all physicians in charge of the large public hospitals to report all cases which came to their notice of bovine tuberculosis having been transmitted to man, and up to this day we have been waiting to hear of the first case. As long as the Royal Commission does not show me a case in which such infection is proved, I can not believe in its assertion. If it be true, as is stated by veterinary surgeons, that a half of 1 per cent. of all cows suffer from bovine tuberculosis, while the Prussian Royal Commission could not point to one case of infection from the drinking of the milk of such animals, it looks as if there were good grounds for Prof. Koch's protest against certain precautions now in legal force nearly everywhere. He holds that the millions wasted by the killing of the animals and for the sterilization and pasteurization of milk ought to be saved and turned to really practical use in combating the dread disease and obtaining mastery over it.

OBITUARY.

DR. EDWARD W. LAMBERT, one of the oldest and most prominent physicians in New York, died from heart disease at his home, 126 East Thirty-ninth Street, on Sunday night, July 17, 1904, after an illness of about a week. Dr. Lambert celebrated his seventy-third birthday on Feb. 15 last, having been born in Boston, Mass., in 1831. At the age of twenty-three he was graduated from Yale

University, and immediately began the study of medicine at the College of Physicians and Surgeons. After receiving his diploma he served as visiting physician in Bellevue Hospital, and began the practice of medicine for himself in 1857. In college and in the office of Dr. Willard Parker, where he was an assistant, Dr. Lambert was associated with Drs. Henry B. Sands and William H. Draper. At the time of his death he was attending physician at St. Luke's Hospital and the Nursery and Child's Hospital. Dr. Lambert became associated with Henry B. Hyde in 1859, who in that year founded the Equitable Life Assurance Society, and was made the society's first medical director. During the period of forty-five years since then he had remained chief of the Equitable's medical staff, although for the last six months he had acted, for the most part, as consulting medical director. Dr. Lambert had a country residence at New Canaan, Conn. He was a member of the University Club, the Century and Yale Clubs, the New England Society, and the New York Academy of Medicine. He is survived by four sons and four daughters, three of the daughters being married. Of the sons, Adrian, Samuel, and Alexander Lambert are physicians in this city, while the fourth is a manufacturer of Manchester, N. H.

SOCIETY PROCEEDINGS.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, held April 19, 1904.

The President, O. H. Schultz, M.D., in the Chair.

Polycythemia in Congenital Heart Disease.—Dr. Isra S. Wile read a short paper on the polycythemia of congenital heart disease. He briefly reviewed the theories which have been devised to explain the phenomena and came to the conclusion the one which assumes the inspissation of the blood as a cause of polycythemia could not be regarded as explaining all of the facts. His own view was that the polycythemia was an expression of a physiological hyperplasia of the oxygen carrying red cells of the blood to compensate for the imperfect aeration which takes place in the lungs in congenital heart disease. The same compensation is required for the lowered hemoglobin content of the individual corpuscles in the blood as is seen in these cases.

Dr. E. E. Smith, in the discussion, said that Dr. Vogel had referred to the fact that in the application of the method, a variable amount of the reagent added was used to react with other constituents than albumen. This was a variable factor and interfered with the accuracy of the test to a certain extent. Dr. Smith inquired whether Dr. Vogel had considered the advisability of running a control by separating by the heat method the albumin from a portion of the urine, filtering it off and running a control on the filtrate as a factor for correction. That would take but a few moments,—acidify the urine with acetic acid, heat and filter and run a control on the filtrate. It seemed to him that would afford a correction.

Dr. Vogel said he understood what Dr. Smith meant and it might possibly afford a factor for a particular urine.

Dr. Smith said that he wanted to call attention to the fact that Esbach's method so generally used in office examinations was quite unreliable owing to the fact that the tubes manufactured are made on a wrong principle at the present time. The original principle upon which the Esbach tubes were made was the fact that the albumen precipitates out by gravity a certain

distance in a certain time. The tubes should have the U mark at a certain uniform height. The manufacturers had made the mistake of supposing that the U mark should represent the capacity of the tube. Consequently instead of being at a fixed height the U marks in the tubes now used varied greatly in position, with the result that there was a variation of 50 per cent. more or less, in the results obtained in the different tubes. Dr. Smith thought the fact important and that perhaps those who had not considered it would like to have their attention called to it.

Dr. P. A. Levene said that for clinical purposes the Esbach method was quite satisfactory. The presence of a few milligrams more or less of proteid in the urine does not indicate any alteration in the conditions of the kidneys. It was of importance to have a general knowledge whether the urine contained small or large quantities of albumin, and a similar knowledge of the decrease or increase of the substance in disease. Such knowledge it was possible to obtain by Esbach's method. Dr. Levene did not believe that it would be possible to devise a reliable volumetric method for the estimation of proteids, for the reason that proteids combine with other substances very slowly.

Dr. George Mannheimer said that he had not often made quantitative estimates of albumin in urine, because they seemed to him not of great clinical value. The amount of albumin he considered diagnostic only in certain conditions of the kidney; e.g., congestion due to heart disease, where it varied with the state of the circulation. In cases of chronic nephritis, the degree of albuminuria varied so much from day to day that it could not serve as a guide to the severity of the disease. Von Noorden brought out, years ago, the fact that the variations were so great as to be almost characteristic of chronic Bright's disease. In a few cases where it had seemed of interest to estimate how much albumin was passed in twenty-four hours, he had determined the total nitrogen by the Kjeldahl method, first with the albuminous urine, and then with a thoroughly disalbuminized specimen of the same twenty-four hours' collection. The difference between the two results indicated the amount of albumin. This procedure had been compared with the weighing method as a standard and the error had been found to be less than 1-100 of one per cent. Esbach's method in spite of its faults seemed a convenient clinical one to use for continuous estimation in a given case. If employed always under the same circumstances, the same mistake would always be made and it could thus be used for comparison. Dr. Mannheimer asked Dr. Vogel whether he had tested the method he described against any other reliable one.

Dr. Smith said he had not anticipated Dr. Levene's remarks on the Esbach method. In view of the fact that Dr. Levene inferred that the Esbach method was used by all, he thought it would be well to describe the method he used in his routine work. It was quite simple and had an advantage over the Esbach method in that it took less time to get final results. It was practically a simplified gravimetric method. He took a small quantity of urine, an amount that he estimated would contain about 20 milligrams of albumin. This he diluted with a saturated solution of common salt, coagulated with heat and acetic acid; let it stand on a water bath for a few moments until the coagulum was well formed, and filtered through a Gooch crucible, or through a small, weighted, folded filter. The precipitate was washed with hot water, alcohol, and ether. All this took but little time and for any one who did it in a routine way it was very simple. The

Gooch or filter was dried in an oven for three hours at 110° F.—a much more than ample time to thoroughly dry the precipitate. It is then cooled and weighed, and in the case of the Gooch, ignited and reweighed. This gave a ready method for the estimation of albumin; in the laboratory it could be done in half a day; and the method was much more satisfactory than that of Esbach, and one that the speaker thought would be followed with advantage by those who had the equipment of a laboratory.

Dr. Vogel said that the control determinations were made by the method of Scherer, which consists in carefully acidulating with acetic acid and then coagulating the albumin by heating on the water bath for one-half hour. The speaker added a certain amount of salt solution before heating in order to ensure complete precipitation of the albumin. The fluid was then filtered through a dried, weighed filter; the precipitate washed with water, alcohol and ether, dried to constant weight, and the amount of albumin determined. That, he thought, was the method usually considered the most accurate. Incineration of the filter was not necessary if the amount of precipitate were not large and the washing was thoroughly done. The study had seemed advisable for the reason that this method of Wassiliew's has been reproduced in a number of different textbooks, always without any special comments, which indicate that it had been accepted. Dr. Vogel had thought it did not seem right to have the method go on, perpetuated indefinitely, without investigation, so he undertook it. The result had been rather unsatisfactory to the method.

As to Dr. Levene's remark that no titration method of determining the amount of albumin was likely to be successful, Dr. Vogel said in this investigation everything had pointed to that fact. It appeared that the union of the sulphosalicylic acid with the proteid took place quite slowly and evidently incompletely, so that there was no definite means of knowing when complete union had taken place. Probably, also, the fact that albumin which originates from different sources may have different affinities for acids, entered into the question.

As to Dr. Smith's remarks, Dr. Vogel said that in carrying out the determinations a large number of parallel determinations with the Esbach tube had been made. He could only corroborate what Dr. Smith had said as to the unreliability of the Esbach method. The gravimetric method described was extremely accurate but, for the practitioner, entirely impracticable. He thought a method which could be applied to the purposes of daily routine use without such expenditure of time, and yet would afford fairly reasonable accuracy, was the desideratum. Some German authors used tables from which the amount of weighed albumin corresponding to given bulks of precipitate settling in the test tube after boiling, and roughly gauged by the eye, might be determined. This method was open to gross errors, but was said not to be more so than the Esbach. It was not necessary for clinical use to know the exact number of milligrams to the liter but to know whether the amount was increasing or diminishing from day to day.

Some Observations on Complement.—Dr. Edna Steinhardt read some observations on complement. The work had been carried out in the Research Laboratory of the Health Department, through the kind permission of Dr. W. H. Park, whom she wished to thank for his courtesy and for his many suggestions and criticisms. Her thanks were also due to Dr. Anna W. Williams for her suggestions during the course of the work.

The points under consideration were: (1) The effect on the complement of passing serum through a Berke-

feld filter. (2) The differentiation of bacteriolytic complements by means of a filter, by heat, and by preservation. It was found that the fresh serum of the horse was lytic to the stock typhoid culture, so this combination was used in the following experiments. When fresh lytic serum was passed through a small Berkefeld filter, the first 10 c.c. had lost its lytic action, the second 10 was partially active; the third more so, while the fourth 10 was unimpaired in its lytic strength. This gradual passage of the lytic property of the serum through a Berkefeld filter accords with the same fact noted by Graham-Smith, for the precipitins,¹ and by Park and Collins for the agglutinins.² There are, however, in lytic action, two factors to be considered, the immune body and the complement. The question is: Is the first filtrate lacking in one or both? Ehrlich and Morgenroth and Ainley Walker state that the immune body is present in the filtrate; while Pfeiffer, who filtered small quantities of serum, noted considerable reduction of the immune body. To test this point, portions of the first 10 c.c. passed through the filter were added to fresh lytic serum and the Neisser and Wechsberg phenomenon of deviation of the complement, due to excess of immune body, was produced. Therefore, though there may have been a diminution of immune body in the filtrate, still there was sufficient present to produce lysis, if there had not been a lack of complement. Ehrlich and Morgenroth state this retention of complement to be due to absorption to the filter. This was proven to be so by passing 10 c.c. of a lytic serum through a small Berkefeld filter. Five c.c. of this filtrate were then drawn through the filter in the reverse direction. The first filtrate was tested and found to be non-lytic; while that portion which had been passed back through the filter was lytic to a certain extent, though not to the same degree as the original serum. This difference in strength is easily explained by the fact that it would be impossible with such a small amount of fluid to wash the filter clear.

This same fact of absorption was shown by another method: namely, 10 c.c. of the lytic serum were drawn through a Berkefeld filter. The filtrate was removed, and proven to be inactive. Then 25 c.c. of .8 per cent. NaCl solution were drawn through this filter in the same direction. This washing was evaporated to dryness in a vacuum over sulphuric acid at room temperature, and the residue when dissolved was distinctly lytic. To control this, lytic unfiltered serum evaporated in the same manner was shown to still retain its lytic properties, while neither inactive evaporated serum, nor concentrated NaCl solution had any lytic effect when tested. It was also shown that if 25 to 30 c.c. of inactive serum were passed through a filter and then 10 c.c. of a lytic serum were drawn through, this last serum would still retain its lytic quality. In other words, the coating of the filter is purely mechanical, the filter having no selective action for the complement. The complement, however, usually exists in serum in so much smaller proportions than the immune body that in the first few cubic centimeters of a filtrate it is probably present, though in such minute quantities that it is impossible to detect it with our present technic.

Ehrlich and Morgenroth found that they were able to differentiate two hemolytic complements by filtering serum. This was corroborated by Neisser and Döring. Later Vedder repeated this for the bacteriolytic complements. There are three hypotheses that suggest themselves as possible explanations for this separation of complements by a filter: (1) The difference in size of the

molecules of the different complements. (2) The difference in the adhesiveness of the molecules. (3) The difference quantitatively of the various complements.

As to the first, it seems rather improbable that a molecule should be large enough to block the pores of a Berkefeld filter, which are comparatively coarse. The second may be the explanation; but the next hypothesis seems the more probable one, as indicated by the results so far obtained.

In rabbits' serum the greatest lytic action occurs for the typhoid bacillus, less for the dysentery, and least for the colon; and when Vedder filtered rabbits' serum, he found absence of lysis for the colon, impaired for the dysentery, and unimpaired for the typhoid organisms. To take the agglutinins as an example, in a serum which contains twice the amount of agglutinins for Flexner "Baltimore" as it does for Penman (two dysentery organisms), when a few c.c. of this serum were filtered and this filtrate tested, it was found that the agglutinins were reduced proportionally; that is two-thirds of each had been retained in the filter. It would be possible by the testing of successive filtrates to find that point where no visible reaction could be obtained with Penman, but Flexner "Baltimore" would still in certain dilutions be agglutinated; thus apparently differentiating by a filter between the two agglutinins. The tests for small amounts of agglutinins are, however, much more delicate than those for complement. For this reason, with the present methods a trace of complement could not be detected and would be called absent. Therefore it seems probable that the differentiation by the filter of bacteriolytic complements is a quantitative rather than a qualitative one.

Tests were also made upon the differentiation of bacteriolytic complement by heat, and here the typhoid complement was found to be more resistant than the colon or dysentery complement, but the serum originally was more lytic toward typhoid than towards either of the other two. Also, the complement for the typhoid bacillus was present longer in preserved serum than was that for the dysentery organism.

It may be that the differentiation of bacteriolytic complements by heating, and by permanency, as well as by filtration, is explainable by the same theory of quantitative differences in their amounts originally present in the serum. However, as yet this is only an hypothesis suggested by the similarity of results obtained in all three experiments, and further work will have to be done on the points, before this theory can be proven or disproven.

In conclusion, the results obtained were summed up as follows: (1) The gradual passage of bacteriolytic complement through the Berkefeld filter. (2) The retention of complement of the first portions of the filtrate by the filter being due to absorption. (3) The probable explanation of the differentiation of bacteriolytic complements by filtration is their quantitative differences in the original serum. (4) The similarity of results obtained by the effects of heat and by the effect of time on certain bacteriolytic complements, suggests their explanation on the same basis.

Dr. P. A. Levene, in the discussion, remarked that the observations of Ehrlich that certain complements did not pass Berkefeld filters might be explained by the supposition that they were in colloidal solution. The more soluble complements would pass through the filter more readily. It was not of so much importance to know whether the Berkefeld filter is absolutely or partly impermeable for a complement, as it is to be able to separate the substances by means of filtration. Ehrlich might have achieved this owing to his great experience

¹ Journal of Hygiene, July, 1903.

² Proceedings of the New York Pathological Society, Jan., 1904.

in handling these substances, and to his knowledge of their behavior under different conditions.

Dr. Steinhardt replied that there was no doubt at all of the separation of complements by means of a filter, as shown by Ehrlich, and repeated by other workers. The question had been only of the reason for this separation. The supposition of the colloidal nature of some of the complements causing their retention in the filter might be correct. It was rather difficult, however, on that basis, to understand the passage in the first few cubic centimeters of serum, of the complement for the typhoid bacillus through a filter previously coated with inactive serum, which complement would be completely retained by using an uncoated filter. Also, the proportionate reduction in filtered agglutinins and the similar results obtained for bacteriolytic complements suggested the probable explanation as being a difference in the several complements of quantity rather than quality.

On the Presence of Mallory's Cyclaster Scarlatinus in the Skin of Scarlet Fever Patients.—This was the subject of Dr. Cyrus W. Field. He said that these bodies were described by Dr. Mallory before the Society of Medical Research in Boston, on the fifteenth of December, his paper being published in the January number of the *Journal of Medical Research*, 1904. He had found the bodies first in the skin of a boy who had died on the third day of the rash. There were three specimens examined, one each from the thorax, abdomen, and thigh. One of these pieces showed the bodies present in the epithelial cells, between the lymph cells, and in the lymph space of the corium. In another piece there were a few and in a third none at all. Dr. Mallory had examined this specimen as he wished to compare forms of degeneration in scarlatina with those found in variola, and had found bodies he had noticed before. He had had three other cases in which the same bodies were found. These scarlatinal bodies stain only by the eosin methylene blue stain and can not be demonstrated by the hematoxylin or Borrell stain. Dr. Mallory had tried a number of other stains, as had Dr. Field. Alcohol hardened sections could be used, but alcohol is not a good fixative, Zenker's giving by far the best results. Dr. Mallory had stated that the bodies first appeared in the epithelial cells of the deeper layers, as small rosette like bodies connected by more delicate lighter blue staining material with a central point. In a later stage they break up and then enlarge in the cell. These large bodies were homogeneous, staining with methylene blue, and as they increased they became reticular. They were both intra- and extracellular and the latter showed what appeared to be ameboid motion. The determination of the exact pathological significance of these bodies is a very difficult matter and it cannot be proved on purely morphological grounds. In sections of corneas treated with diphtheria toxin, Dr. Ewing has shown that we can get keratinization which simulates the ameboid forms. It is supposed that they enter the cells and there become larger, thickening, and giving out a smaller reticular structure; then they enlarge gradually, become more dense, homogeneous, shrink, and finally form rosettes again; how many times they pass through the cycle Dr. Mallory was not prepared to say. He had found them in four cases in the skin, in the epithelial lymph sinuses of the tongue in one. Dr. Field had examined skin from the groin of five scarlet fever patients dead from the disease, two patients dying on the third day of the rash, one on the second day, two on the fourth day. In all five cases he had found these bodies. Dr. Mallory had examined them and had agreed that they were similar to those he found. Dr. Field had also examined the skin of four patients living at the time the skin was

taken; in one case on the first day, in two cases on the fifth day, and in one on the sixth day of disease. In none had he been able to demonstrate the presence of these bodies. The skin had been taken from the thorax and not from the thigh. He had been able to find reticular bodies in the cells, a few outside of cells, and a few he was not sure of, and he was not sure at all what they were in the lymph sinuses. He had been unable to find any of Dr. Mallory's rosettes. In Dr. Field's opinion these bodies were much more definite and delicate in structure than any degeneration he had seen. They stained in a manner similar to the malarial parasite, but not so intensely. They do not take up methylene blue so intensely. What their origin is, or how they pass into the skin, Dr. Field did not know, except that from the appearance of the skin they seemed to have entered by way of the lymphatics. He thought the significance of the bodies might be determined from the morphological status in time, but he thought the problem would require a good deal of control work on sections of skin from a variety of conditions. He did not accept them as protozoa or degeneration, and at present was a complete agnostic on the subject.

Dr. I. Levin, in the discussion, said that ten years ago he did a great deal of work on the protozoa of cancer. When he turned to this study two facts struck him, (1) that the so-called protozoa of cancer resembled to a great extent the formations found in smallpox or scarlet fever, so that without the inscription he could hardly distinguish one from the other; (2) he found in his study of the protozoa of cancer, that it was easiest to find these pictures in skin cancer—ulcus rodens. This might be caused either by the fact that the epithelium of the epidermis undergoes sooner different processes of degeneration or that the protozoa penetrate the skin more easily than the other tissues. It rather spoke against the parasitic theory that the ulcus rodens is comparatively a benign cancer. In this question as in a number of others in pathology, the morphologist was powerless to solve the problem unaided. Until such time as experimental pathology could find some way to get nearer to the physiology of the parasite, we would spend a great deal of time and energy and say at the end: "I do not know whether it is a degeneration or a protozoan."

Dr. Field said that he thought Dr. Levin had put it too strongly in saying the student could not decide the question. Dr. Field thought that with control work the question could be decided. The malarial parasite had been found to be an etiological factor in malaria. Had it been impossible to discover it in the blood it would have been found to be very characteristic in the stained sections. He thought any one who had looked at Dr. Homer Wright's specimens from the Delhi boil, in which he demonstrated the parasite in that disease, would agree that these questions could be decided in that way. He thought the question under discussion could be decided in the same way if studied long enough. The bodies were striking and particularly well differentiated. Dr. Field thought, however, that it would require a great deal of work on numerous skin lesions or internal organs of scarlet fever patients before the nature of the lesion could be decided, but he did not despair of in time being able to help in the matter.

A Case Simulating Hodgkin's Disease.—Dr. Harlow Brooks showed specimens from a case simulating Hodgkin's disease. The patient was a boy about twelve years of age. He had been at the Montefiore Home for three years. The history of the case dated back to April, 1901. The onset of the disease had been sudden with vomiting, loss of consciousness and pains in the abdomen. The patient was prepared for an operation for appendicitis;

but on palpation over the abdomen the tumor formation was found and it was decided not to operate. In two weeks the boy improved and was taken home. Later, the abdomen began to grow and he stooped forward, complaining of pain on the left side in the region of the bladder. Afterward some diminution in the size of the abdomen took place but the boy still walked in a peculiar position, the thigh on the left side held rigid and the body stooped over to relax the muscles of that thigh. Subjectively he complained of nothing. Physical examination showed a poorly developed, poorly nourished, dark complexioned boy, no skeletal deformities, no skin lesions. Thoracic organs negative; veins anemic. The glands of the groin were palpable but at first without perceptible enlargement. He fattened up considerably after four years in the hospital but the abdominal circumference increased. Nothing of any importance developed in the thoracic condition. An exploratory laparotomy was performed, and, commencing at the median line in the abdomen, a glandular growth was found. A nodule was removed for microscopical examination and a diagnosis of probable peritoneal endothelioma was made. Frequent blood examinations were made but no leucocytosis was found up to shortly before death when complicating lesions caused the development of leucocytosis. Differential leucocyte counts had shown the relative percentages to be approximately normal. The treatment of the case was unimportant and without effect on the course of the disease. Dr. Brooks showed the organs from the case. The heart was negative. The lungs showed intralobular pleurisy; their tissue was salmon colored, very firm, and showed microscopical changes like those of the ordinary cardiac lung. Dr. Brooks had thought at the time of autopsy that an infiltration of lymphocytes into the lung was present, but microscopically this was not substantiated. A moderate increase in fibrous connective tissue was found; otherwise the lung was like that in ordinary cardiac cases. The glands of the neck were enlarged to a considerable degree. The precordial lymph-nodes were moderately enlarged; those at the bifurcation were markedly so. They were very firm and light pink in color. Dr. Brooks had described the liver in his postmortem examination as showing lymphoid infiltration, but this was disproven microscopically. The spleen was enormously enlarged. There were whitish nodes present in it which Dr. Brooks took to be hypertrophic Malpighian bodies. Microscopically these were found to be made up of dense masses of fibroblasts and connective tissue fibrils, and in places amyloid degeneration had taken place. On opening the stomach Dr. Brooks had found whitish patches which he took to be infiltration with lymphocytes, but which proved to be areas of fibrosis. Microscopically the kidneys were also found free from leucocytic infiltration.

The main abdominal tumor was found to be made up of the greatly hypertrophied retroperitoneal lymph-nodes which although they still preserved their general contour had grown so in size that some of them measured as much as 10 cm. in diameter. Their tissue was found to be very firm and no areas of necrosis could be made out, though in certain places the tissue was slightly yellowish. The capsules of the glands seemed to be intact throughout and although they were firmly attached to the surrounding structures and to the periosteum of the vertebrae, infiltration outside the nodes could be made out nowhere. Microscopically the structure of these nodes varied greatly though all were characterized by replacement of the normal lymphoid cells by masses of proliferating fibroblasts and connective tissue tendrils. Some of the nodes showed between this connective tissue network very numerous giant cells, having, however, no

definite arrangement; nothing like tubercle formation was to be made out in any of the sections. A few of the lesser enlarged nodes showed apparently a simple hyperplasia of the lymphoid cells, such as one sees in the nodes of typical cases of Hodgkin's disease. In the left iliac fossa was a great mass of enlarged glands measuring 13 by 8 cm. The microscopical structure was found to vary in the degree of fibrosis as did the other nodes previously described. A few of the nodes here on gross examination showed a curious yellow pigment deposit, like a sprinkling of the surface with sulphur. Microscopically this pigment was found to be deposited in the cytoplasm of the lymphoid and connective tissue cells. Although these glands practically filled the iliac fossa on this side and by their pressure and that of the corresponding enlarged inguinal lymph-nodes caused the flexed position of the left thigh, in no place had the growth invaded outside tissues, not even the periosteum of the iliac bone to which the mass was firmly attached.

Dr. Brooks thought the diagnosis of the case lay between sarcoma and Hodgkin's disease, in which the hyperplastic lymph-cells had been replaced by fibrous connective tissue. He had never heard of nor seen a case in which replacement was so complete as in this instance, or one in which the picture presented by different glands varied so markedly. There was no typical fibrillar arrangement leading to the diagnosis of syphilis and this diagnosis would have suggested some disease of the bone—some skin manifestations, some syphilitic symptoms—none of which was present in this case. With syphilitic glands so large as these necrosis would probably have been found somewhere in the nodes. Tuberculosis had, of course, been considered, and Dr. Brooks thought excluded, because in this enormous mass of tissue one would expect to find something fairly characteristic of it, were it tuberculous. Sarcoma might be diagnosed, in which case it must be classed as a fibrosarcoma; but it is contrary to our knowledge of this growth to have it limited to the lymphoid tissues, as in this case. If sarcoma; we would have expected the tumor cells to have infiltrated outside of the Malpighian bodies, in the spleen, for instance. We would also have expected the growth to burst out through the capsule of the glands and to have invaded the surrounding structures. Dr. Brooks thought it a case of Hodgkin's disease in which there was replacement of the hyperplastic lymph tissue by the connective tissue hyperplasia which is found so commonly in chronic inflammatory processes.

Dr. Ewing said that he had examined the sections from Dr. Brooks' cases, and believed that both the histology and the gross appearance left no room to doubt that the case was one of Hodgkin's disease. Compared with others the tissue in this case contained many more giant cells than is usual, and these cells gave the section somewhat of a sarcomatous appearance. This histology had been regarded for many years in Vienna as pathognomonic of Hodgkin's disease, and although it seemed to be less frequent in New York, it had recently been described anew in a series of cases by a Baltimore writer.

In some cases of *constitutio lymphatica* he had seen a good many giant cells in the hyperplastic lymph nodes, and would like to know if in this case there were any of the signs of the lymphatic constitution, such as rickets or persistent thymus. The absence of necrosis, while characteristic of this type of Hodgkin's disease, did not, Dr. Ewing believed, rule out a tuberculous origin, which could only be attempted by inoculations of large amounts of the material. On the histology alone he did not think it possible to exclude tuberculosis.

Dr. Brill said that the doubt expressed by Dr. Brooks

as to the pathological nature of this case was but another indication of our lack of knowledge of the pathology of Hodgkin's disease. While the disease represents a definite clinical entity, its pathology presents a number of various and not allied or identical conditions. Clinically, the disease presents anemia without marked qualitative changes in the red and white cells of the blood, enlargement of the lymph nodes, and in almost all cases, more or less increase in the size of the spleen, accompanying progressive weakness, and finally, almost invariably a fatal issue in two or three years or less. When the disease is considered histologically and pathologically, it represents this clinical picture arising from a lymphoid hyperplasia, not induced by tuberculosis, syphilis, rachitis, or sarcoma. It is here where our knowledge is at fault, for cases clinically like Hodgkin's disease occur, which on pathological examination may prove to be any one of the conditions just mentioned; namely, tuberculosis, sarcoma, or syphilis.

However, because a change in some of the lymph nodes in a case of Hodgkin's disease may be due to tuberculosis of these nodes, we are not justified in assuming that that case is not one of Hodgkin's disease, for there is no reason why a coincidental infection with tuberculosis may not exist together with the original infection, if we may call Hodgkin's disease an infection, as it would seem to be from many of its pathological aspects.

The case presented by Dr. Brooks was extremely interesting from both the clinical and the pathological points of view and Dr. Brill asked whether Dr. Brooks could say in which groups of lymph-nodes enlargement was first noticed, whether the cervical, mediastinal, retroperitoneal, mesenteric or inguinal.

Dr. Brooks replied that he had first observed the growths in question in the retroperitoneal region.

Dr. Brill said that this was against the rule in Hodgkin's disease, where the lymph-nodes of the anterior cervical or mediastinal regions were commonly first involved, considerably before the retroperitoneal or inguinal nodes. From a clinical aspect there was no reason to call this case of Dr. Brooks' anything else than one of Hodgkin's disease.

Dr. Brooks said he felt somewhat comforted at the remarks made. He said the more he studied the glands the more each one seemed to show a different picture. He could not get rid of the idea that the case was one of Hodgkin's disease, but it differed from all cases as he had seen it, and the changes in the glands were not as usually found in that disease, so far as he had been able to examine them, having studied about thirty instances. They also differed from those of any case he had read of. In regard to status lymphaticus, the lingual adenoids were noted as moderately enlarged in the protocol, but the tonsils were not hypertrophic, and the thymus was absent. In the detailed autopsy, only the outlines of which had been read, he did not find anything which led him to think it was status lymphaticus. The thickened areas in the walls of the stomach and gut which he had taken to be lymphoid infiltration, proved to be fibroid thickening. On the dorsum of the tongue he had found a small excavated, even-floored ulcer, which looked like a trophic ulcer. The child had never complained of this and it was only discovered post mortem. At one side of this ulcer was a small mass of connective tissue which might have been considered a tubercle if any other tubercles had been seen in other portions.

HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Regular Monthly Meeting, held March 26, 1904.

The President, Augustus H. Knight, M.D., in the Chair.

Sepsis After Operation for Adenoids.—Dr. Charles Schramm reported in detail a case in which septic fever followed operation for the removal of adenoids after an interval of several days. The patient, a child of six years, had been in very good health, having up to the present escaped diphtheria and the other ordinary infectious diseases of childhood and even the minor ailments of the earlier years. She had not been under medical observation for four or five months, when her mother brought her to the doctor for obstructive respiratory symptoms which had gradually developed during the five or six weeks immediately preceding. The child had become a mouth-breather during this interval and had also developed slight deafness, besides suffering from a constant nasal discharge. The vault of the pharynx was found filled with a succulent mass of tissue almost entirely obstructing the posterior nares. The tonsils were not enlarged, nor were the cervical lymph-nodes affected. A persistent dermatitis of the upper lip was sufficient evidence of the irritant character of the nasal discharge which had existed for several weeks. There was slight cough, but only scanty expectoration. The appetite was not impaired and there was some dyspnea on exertion. This probably made the child disinclined to exert herself at play or otherwise. The eyes were watery. The chest expansion was good and the lungs gave no evidence of inflammatory irritation. The heart action was good and its sounds normal, the urine negative. The patient was removed to a private hospital for operation in the morning and was operated on the afternoon of the same day, after due preparation as to diet. The day after the operation she was removed to her home. The anesthetic used was chloroform, and every precaution to secure asepsis to instruments and surroundings was taken. The growth was easily removed in three pieces, the first as large as a hazelnut the others about one-fourth the size. The bleeding was not excessive; in fact, rather less than usual. The child's head was frequently turned over the edge of the table to give free exit to blood and secretion. Besides, she was not deeply anesthetized and voluntarily hawked and spit out some of the blood and mucus. The tissue removed was mushy, the child was seen at her home on the afternoon of the next day. She was up and about, feeling as well and active as usual. The symptoms of respiratory and tubal obstruction were entirely relieved. The child was seen again four days later in the afternoon. She had been listless all day and complained of chilliness and headache. She preferred to lie in bed. She had no appetite, though to careful examination the throat and lungs were negative. The tongue was coated, the eyes slightly yellow, the abdomen distended but not tender, the temperature was 102.5° F., the respiration 30, the pulse 124. The next morning she seemed much improved, the temperature had fallen to 99° F. and the pulse to 100, the throat was negative. In fact, the whole trouble was considered intestinal, yielding to divided doses of calomel. In the evening, however, she was much worse, with a temperature of 104° F., pulse 140, respiration 38. She complained of pain in the left ear.

Progress of the Infectious Process.—On the next day she had a mild conjunctivitis with moderate purulent secretion. The pain in the ear having increased and hearing being almost nil, the membrana tympani was incised. A few drops of bloody pus escaped. The discharge never was abundant and soon became serous. Two days later the left membrane had to be incised with similar results. Throughout the disease there was

nothing abnormal to be seen in the throat. Three days after the onset the patient developed a persistent hacking cough which in two days became loose when coarse moist râles were to be heard all over both lungs, especially at the bases. No consolidation was demonstrable at any time. There was profuse perspiration at night. The nose began to discharge on the fifth day, the secretion being light-colored. The abdomen continued distended and the bowels sluggish. On the seventh day after their inception the symptoms, subjective and physical, began to subside. Normal sleep returned and with it the appetite. The congestion of the conjunctiva and the secretion from them disappeared. The nasal discharge ceased and hearing gradually returned. The cough continued for two weeks longer. The temperature, pulse and respiration were normal on the ninth day.

Adenoid Growths and Tendencies to Infection.—The condition previous to operation was apparently one of acute adenoiditis, a process of rapid proliferation of the lymphatic tissue, which in part constitutes the pharyngeal tonsil. This could have resulted apparently only from an acute infection. In this connection the opinion of W. N. Nikitin, writing in the *St. Petersburg Wochenschrift*, is interesting. The pharyngeal tonsil, instead of being possessed of phagocytic or protective powers, is especially liable to infection to a greater degree than other parts of the mucous membrane. The infective influence may extend to the lower respiratory organs. Not only is the enlarged tonsil a culture field, but, according to Dr. Wex, in the *Archives of Otology*, there may be a possible secretion of a toxic substance by the adenoid growth itself. If this case was one of sepsis resulting from infection of a denuded surface, an interval of three days for its development, i.e., the period of incubation, would not be inconsistent with the diagnosis. The alternative of a grip infection, the disease being prevalent at the time, is rather invalidated by the course of the temperature which is characteristic of the former. However, acute otitis media might cause similar temperature changes, even if dependent on grip infection, hence there is room for doubt of this diagnosis. Two consulting physicians who examined the child's chest could find no evidence of pneumonia, nor was the temperature-pulse ratio indicative of it. It is remarkable that the medical literature of the past few years contains no similar case. The only allusion to a systemic infection following operation for the removal of adenoids appeared in a quotation from the *Journal of Laryngology* for October, 1901, where Wyatt Wingrave described a rash after adenoidectomy, which appeared on the second or third day. It was papular with an areola or erythematous in character; attacks the neck, chest and abdomen. It lasted two or three days. There was no desquamation and only slight constitutional disturbance.

Molecular Osmotic Tension of Fluids in the Body.—This, the regular scientific paper of the evening, was read by Dr. Edward K. Dunham. He explained the significance of differences in molecular tension and their methods of measurement. Direct observation of osmotic pressure is possible, but would require very delicate apparatus. There are two similar methods of measuring osmotic pressure: one is by finding the lowering of the freezing point of a solution, the other by observing the rise of the boiling point when substances are in solution in liquid that are submitted to either of these physical processes. It has been found that when one gram molecule is dissolved in a liter of water, the freezing point of the solution is lowered by 1.85 degrees on a centigrade thermometer. It is not difficult to obtain an instrument that will measure such

slight and delicate variations of temperature very exactly. Dr. Dunham exhibited one which was marked in hundredths of a degree and which could be read to even smaller divisions than this, if necessary. Such a thermometer is made with a zero that changes from day to day according to temperature, but the zero point of which may be regulated by an actual observation in freezing pure water which gives the zero point for each daily set of observation.

Latent Heat.—A rather pretty demonstration of the existence of latent heat is made when water is frozen for these experiments in order to determine the freezing point of a solution. At first when the liquid to be observed is plunged into the freezing mixture the thermometer falls below the zero point. Then, as the water freezes, its latent heat is given out and the mercury rises rapidly to a point where it stays until all the liquid becomes ice, or until whatever ice has been in the liquid has entirely melted. This point represents the freezing point of the solution in question. The conductivity of liquids bears a definite relation to the molecular concentration of substances in solution, but there are certain exceptions that must be noted: For instance, if common salt be dissolved in water, a certain number of the atoms of hydrogen and chlorine are set free as ions, that is, atoms bearing a definite charge of electricity and the sodium and chlorine do not exist as free sodium and free chlorine which must be in a molecular condition but are in the ionic state. As a consequence of the presence of these ions the conductivity of the liquid is greatly increased. The measure of the electrical conductivity then becomes the measure of the electrical dissociation and is proportionate to the number of ions present.

Application to Formation of Lymph.—Certain of these principles can be applied to the investigation of the formation of lymph. Lymph formation is due to a number of factors. The most important are capillary pressure, tissue conditions, the permeability of the capillary wall, the osmotic pressure of the plasma, the osmotic pressure of the lymph, the osmotic pressure within the cells, and, finally, the permeability of cells. There are three processes in all transudation through animal membranes. The first consists of the mechanical squeezing through the membrane of fluid; the second is the passing of water through an animal membrane by osmosis; the third is the diffusion of substances in solution through a capillary wall. The albumin in a transudate finds its way through by a process of filtration. The study of transudates by cryoscopy gives a new set of data for the clinical recognition and differentiation of these more or less inflammatory fluids and some hint as to diagnosis and prognosis as a consequence. Ordinary blood depresses the freezing point by about .56 of a degree. Defibrinated blood is practically the same. Transudates vary between .52 and .64 in their effect upon the lowering of the freezing point. When transudates are studied with reference to these figures they are found usually to correspond to the averages given. But unexpected variations are found.

Anomalous Case.—In a patient seen at Bellevue, about a year ago, a special condition of the pleuritic fluid effused after an attack of pneumonia was found to exist. The patient was a scene shifter who had for a number of months been traveling through the country with a troupe in the performance of his regular duties. These usually consisted of a severe amount of active labor, requiring intense effort for a few minutes, after which the patient was likely to sit in a draft for a considerable period. He suffered from a pain in his chest for several months and then came down with a chill. Frank lobar pneumonia developed, but with some

pleurisy and effusion. The fluid removed depressed the freezing point by 1.40 degrees. This was the average of a large number of observations. Besides the electrical conductivity of the solution was lower than usual though the specific gravity was about that which obtains in pleural exudates. The pleural fluid was treated by ether, acetic ether and chloroform, but no special extractives were obtained. There was a slight trace of lactic acid in the fluid. The patient's blood was obtained and presented no special depression of the normal freezing point. This case seems to illustrate what may prove a very practical application of cryoscopic methods to clinical medicine. They will refer rather to prognosis than to diagnosis. It is evident that such a fluid could not be reabsorbed, since its molecular concentration is higher than that of the blood. The change, if any, would rather be in the opposite direction, since the influence of osmosis would make for this. It seems probable, however, that no interchange has taken place for a considerable period nor would it. The pain in the side, prolonged over many months, was a protracted attack of pleurisy which had brought on great thickening of the pleura. This was no longer a permeable membrane and hence no water passed from the blood into the pleural sac, after the exudate had once been formed. The excessive molecules present were not salts, hence it seems not unlikely that they were cleavage products of the large proteid molecules which had split into simpler molecules during their stay in the pleural cavity. Horse serum, subjected to the same conditions as that of the pleuritic fluid, by enclosure in a closed tube in an incubator kept at human temperature underwent no change. Bacteria introduced into the serum did not produce any change either. It seemed not improbable that the change noted was due to ferments from the tissues, especially such enzymes as occur on leucocytes. When some pleural fluid was obtained containing a large proportion of pus and leucocytes and some of this fluid was, under aseptic precautions, sealed in a tube, a change corresponding to the molecular concentration of the pleuritic fluid in the patient first mentioned was obtained. There was no apparent putrefaction, however, for the liquid had not changed in electrical conductivity. All putrefactive changes would give rise to ammonia, and the ammonia salts would lead to dissociation with the presence of free ions and consequent increase of electrical conductivity.

Chances of Absorption.—Where such high molecular concentration is found in a fluid there can be no hope of its reabsorption, and measures for its removal should be taken unless, indeed, by the injection of artificial serum the molecular concentration could be made more nearly similar to that of the blood, with consequent chance of natural absorption. This might produce an osmotic current toward the blood with relief of the condition.

Ionization.—Dr. Reynold Wilcox, in discussing Dr. Dunham's paper, said that these studies of molecular concentration and electrical conductivity with the relation to the presence of free ions in solution may open up a new chapter in the study of applied therapeutics, especially as regards the rational employment of drugs. There has been for some time a growing hope that the ionic theory may serve as a new basis for pharmacology. As is well understood, little is known about the real action of drugs in the human body and the fact that even ordinary sulphuric acid may exist in solution in two different forms gives some idea of the complexity of the problems presented. Alcohol is now recognized to be antidote of carbolic acid, but this is not so much because it dilutes carbolic acid, nor even because it is an alcohol and thus a congener

of phenol or carbolic acid, but apparently because it prevents the ionization of carbolic acid in the presence of human tissues. Olive oil seems to act in something of the same way and it has been recognized that solutions of phenol in olive oil do not dissociate and hence are not likely to be effective as antiseptics. It has been known for some time that the degree of ionization of a substance in solution varies with the dilution and the temperature. It has been hard to find the exact influence of such factors. The use of electrical conductivity as a measure of ionization, however, may prove a very practical method of determining factors that were hitherto only to be found by delicate methods. Cryoscopy has proved a disappointment in furnishing any special information with regard to the urine, but it seems not unlikely that it will prove of decided advantage in the more complex problems of physiological chemistry in normal conditions within the body.

Cryoscopy of Exudations.—Dr. John H. Huddleston said that Dr. Dunham's novel deductions with regard to exudates and transudates after examination by cryoscopic methods seem to furnish a new field for the application of cryoscopy. He has been rather disappointed in the use of cryoscopy for urinary investigation, but these suggestions open up a new and important outlook and seem to add a definite prognostic feature to the diagnostic promise, while it is also shown that there are even some suggestions as to treatment that may be derived from cryoscopic investigation of pleuritic and other exudates. These will undoubtedly prove welcome additions to the armamentarium of the clinician and especially of the laboratory specialist.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, held Thursday evening, March 17, 1904.

The President, Dr. Andrew H. Smith, in the Chair.

THE scientific business of the evening consisted of a symposium on headache and its relation to eye-strain. These papers will all appear in full in the *MEDICAL NEWS*.

Mental Disturbances and Eye-strain.—Dr. Charles L. Dana said that the eye is the only organ of special sense that is usually supposed to cause by reflex action various disturbances of the nervous system. No one has ever heard of ear strain or tongue strain. Eye-strain may be divided into two classes: subcortical eye-strain, that is reflex effects produced because of failure of the accommodative nervous mechanism to act properly, and cortical eye-strain due to the conscious effort to overcome ocular defects of various kinds. It is this latter that is supposed to be the basis of most of the functional nervous disturbances. It is well to realize that this is really a brain strain instead of an eye-strain. In Dr. Dana's opinion no true mental disease is ever due to reflex from the eye or is ever cured by correction of optical defects.

Exhaustion Psychoses.—Dr. Dana has seen certain cases of psychic depression associated with eye-strain in two classes of people. In the first the patient is usually a young adult who has been studying very hard. As the result of improper refraction and the conscious effort to overcome it after a time the student becomes unable to read or to study and a state of mental depression supervenes. A very curious phenomenon in these cases is that after a time the patient also does not care for outdoor sport, though he may previously have been much interested in it. Rest alone fails to cure the condition. After refractive errors are corrected, however, the patient's improvement is marked. The other class of patients is usually represented by men in their for-

ties suffering from the beginning presbyopia of advancing years. In these cases as the result of reflexes from the eyes mental depression to the extent almost of melancholia, with great irritability is known not infrequently to develop. The symptoms are relieved almost at once by the wearing of proper glasses and no other form of treatment is of avail. Not infrequently there is no symptom that points very distinctly to the eyes in these cases, and unless the physician is on the lookout for them the true cause of the mental depression may escape his notice.

Minor Psychoses and Eye-strain.—While it is often claimed that minor psychic disturbances are due to reflexes from the eye, Dr. Dana has not found this to be the case in practice. When the patient has a good mind to begin with, this is not overthrown by defects of vision. The only serious effects are produced on the minds of those who are already suffering from mental disturbances of low grade, due to heredity, or other causes. As a matter of fact, the only real mental affection connected with eye-strain, in Dr. Dana's opinion, is the symptom-complex with grandiose ideas on the part of ophthalmologists, who think that spectacles are so important and who are able to trace all the failures of genius and their ailments to the absence of spectacles.

Headache and Eye-strain.—Dr. C. W. Cutler discussed the relation of headache, migraine and other sensory disturbances to eye-strain. He does not consider that migraine should be considered merely as a sick headache, nor has he found that true forms of migraine are ever cured by the correction of refractive errors. Migraine occurs in unstable nervous organisms, that are readily influenced by peripheral irritation of any kind. Heredity is a prominent feature and the periodicity shows the serious affection of the nervous system which underlies it. Where migraine is an equivalent of epilepsy eye treatment is of no avail. On the other hand, where migraine is due to peripheral irritation alone, then the correction of refractive errors as one of the sources of peripheral irritation may bring about relief. While heredity is a prominent element in migraine, it must not be forgotten that the heredity of eye defects is very common. Another important point is that not infrequently the general health needs improvement after refractive errors have been corrected, or the patient's symptoms will not be relieved.

Motor Disturbances and Eye Disease.—Dr. B. Sachs discussed the relation of epilepsy, chorea and the convulsive tics to eye affections. He said that the dependence of the motor neuroses so-called on eye-strain had been greatly exaggerated. As the true nature of these neuroses comes to be better understood, fewer cures are reported. With regard to epilepsy, it is only in American literature as a rule that supposed cures of this serious nervous disease are reported by the oculist. Neurologists have not reported such cases, and in the recent large monographs published in Europe, on epilepsy, very little attention is paid the question of eye-strain. The investigating committee of the Neurological Society of New York some years ago investigated the question of the cures of epilepsy by the correction of eye defects and after carefully following fourteen cases, found that not one of them had been improved and that the evidence in other reported cases was untrustworthy. The reports of such cures can only be looked upon as morbid literary products.

Craig Colony Experience.—Recently a committee investigated the condition of the eyes of epileptics at Craig Colony. A much larger proportion than is usual among people of their years were found to be suffering from various eye defects. The refractive errors were therefore carefully corrected and disturbances of mus-

cle balance adjusted. After a full year's experience of the patients under the altered circumstances the report of the condition of these patients, 68 in all, shows that one of them has been improved somewhat, but that all of the others have remained in the same condition as they were before. Almost any procedure with therapeutic suggestiveness in it would have given better results than tris, though much was hoped for it and much more written about the causative effect of such eye disturbances in the production of epilepsy.

Chorea and Eye-strain.—Dr. Sachs has never seen a case of true chorea benefited by a correction of refractive errors. Habit chorea, which often resembles true chorea, may begin in efforts to make up for refractive errors and this may be completely cured by the adjustment of proper spectacles. While habit chorea is usually of the face, it may affect other parts of the body and especially the shoulders and arms, and even these manifestations may be cured by the wearing of spectacles. In epilepsy it is as common to see patients wearing glasses as to find on them the evidence of a bromide rash. When other procedures than the fitting of glasses is attempted, even to operations, the ophthalmologist's work seems unjustified. Dr. Sachs has seen a teacher who suffered from occasional nocturnal epilepsy treated by tenotomy and thus made to suffer from double vision which was very annoying to him, though his nocturnal epilepsy had proved a source of very little inconvenience, beyond apprehension.

Hysteria and the Eye.—Dr. Ward A. Holden discussed the relation of the eye to hysteria, neurasthenia and the traumatic neuroses. The most constant symptom of hysteria is the concentric contraction of the visual fields. There are, however, various anomalous symptoms, occasionally double vision to a certain degree; or, on the other hand, hemianopsia are not unusual. In one case the candle flame was seen single in all directions up to fifteen feet, but double after that. After the concentric contraction of the visual fields the spiral field is the most usual; that is, the patient when examined shows at first a contraction of the fields and this grows smaller and smaller as the examination continues. Anomalous fields sometimes occur. The anesthesia of the retina corresponds in certain ways to other anesthetic stigmata of hysteria and traumatic neuroses and there may be hyperesthesia with supersensitiveness to light or with the occurrence of peculiar figures in light before the eye that also correspond to other hysterical conditions.

Functional Neuroses and the Eye.—Dr. G. E. de Schweinitz, of Philadelphia, opened the discussion by saying that eye-strain is not necessarily brain-strain in a person of lowered mental equilibration, but brain-strain may be due to eye-strain, even where there is no lowered constitutional condition. Practically every ophthalmologist must have seen, and not infrequently, the condition of depression, sometimes going on to melancholia, which develops in adults past middle life as presbyopia becomes a marked feature of their vision. In early life the backwardness of children must often be attributed to visual defects that need correction. Dr. de Schweinitz considers it very important to remember that it is not the marked errors of refraction which cause mental and nervous phenomena, but, on the contrary, trifling errors are more serious in their effects. The constant effort to overcome these wears out the nervous mechanism. Where the error is large, after a time nature refuses even to try to compensate for it, and so nervous and mental disturbances do not occur.

Migraine and Chorea.—Dr. de Schweinitz has never seen a cure of true migraine by the correction of refractive or other optical errors, but he has seen de-

cided improvement. Migraine can be improved by the removal of any peripheral irritations, and such as originate in the eye are especially important. He has never seen the cure of Sydenham's chorea. But this, like other motor neuroses, demands the correction of every possible source of irritation that may be producing evil effects on an erethistic nervous system. Undoubtedly chorea is due to injudicious schooling in many cases. An analysis of 275 cases of the affection shows that children suffering from it are in 75 per cent. of the cases sufferers also from hypermetropia. This points to the necessity for careful eye examination and treatment. At times physicians will be startled by the improvement that follows proper treatment of the eye. Habit chorea very often is entirely relieved by proper refraction. There is no doubt then that the cure of eye-strain makes distinctly for the happiness of mankind and, while there has been much exaggeration with regard to it, the effort must be to correct the exaggeration and not to limit the application of the important therapeutic principles that underlie it.

Hysterical Amaurosis.—This, in Dr. de Schweinitz's opinion, is one of the most interesting subjects for investigation still left for the ophthalmologist. Bilateral amaurosis is impossible to estimate. There are some fifty cases in the literature. As a rule it comes on suddenly and disappears during the course of the next few hours, or days. One well authenticated case, however, lasted for ten years. Periodic amaurosis also occurs and adds to the mystery of this affection. With regard to hysteria, a most characteristic symptom is the contraction of the visual fields of the still more characteristic symptom of tubular fields, which has been recently insisted on in Germany. In this, whether the field be taken at a distance of one meter, two meters or three meters, the diameter of the field is always the same. There seems to be in most of the cases of hysterical blindness a definite succession of events consisting of amaurosis first, then hemianopsia and finally gradual cure, or there may be amaurosis, central scotoma, then hemianopsia and cure. An unusual width of the field is sometimes seen which corresponds to the hyperesthesia so often noted in other sense organs and especially in the touch nerve endings.

Hysteria and Organic Disease.—Not infrequently hysterical symptoms are noted in connection with organic disease of the nervous system. In these cases hysterical symptoms may also be seen in the eye. The toxemias, as for instance that due to intoxication with carbon sulphide are particularly noteworthy in this regard. Sometimes the symptoms are so anomalous as apparently to point to disseminated sclerosis. Even brain-tumor may sometimes give manifestations which apparently point to hysteria and the possibility of an associated hysteria whenever there is any injury or pathological condition of the nervous centers must not be forgotten.

Headache and the Eyes.—Dr. John E. Weeks, continuing the discussion, said that many headaches are relieved by proper treatment of the eyes, but he had never seen migraine relieved. He had never seen chorea or epilepsy under any circumstances cured by refractive improvement. Habit chorea, especially with unilateral facial spasm, orbicularis spasm, or both, promptly yields to eye-treatment. It must not be forgotten, however, that certain headaches accompanied by tendencies to vertigo that simulate migraine may, just as the habit choreas, be cured by the correction of refractive and other optical errors. The improvement in these cases is so striking and so immediate as often to be a great cause of surprise and easily to lead people into the idea that some serious constitutional condition has been cured.

Retardation of Development.—Dr. Joseph Collins said that there is no doubt now that the failure to correct optical defects during early years may hamper education and retard development. This is one of the great benefits that the correction of eye-strain has brought with it. On the other hand, the exaggerated claims with regard to epilepsy, migraine and chorea are without foundation. One patient improved at the Craig Colony out of 67 shows how little may be accomplished by the correction of refractive errors, for if all 67 of these patients had been hit over the head with a club and told that it would probably do their epilepsy good more than this number would have been improved by that confessedly crude bit of suggestive therapeutics. As regards chorea, Dr. Collins considers that it is an acute infection and therefore there can be no possible hope of improving it by means of eye-treatment. Of 100 cases of true migraine investigated and treated from the eye standpoint, none were improved. On the other hand, very many cases of pseudomigraine have been improved.

Not Necessary to See Patients.—Dr. W. B. Marple said that the neurologists seem to have forgotten how much progress has come in recent years in the practice of ophthalmology. To listen to the neurological criticisms of the failure of the correction of eye-strain to relieve various serious nervous conditions no one would think that they had realized recent ophthalmological progress. It seems that it is no longer necessary even to see patients to diagnose the existence of eye-strain. One distinguished ophthalmologist has shown that all of the prominent writers of England and America who suffered from chronic symptoms of any kind were really the victims of eye-strain diagnosed *in absentia*.

Multiplicity of Prescriptions.—Dr. Marple said that one of the most unfortunate features of present-day prescribing of glasses for refractive errors is the number of times that some eye specialists consider it advisable to change their prescriptions. If, after refraction, the patient comes back ten days to two weeks later, with a report that he is not feeling better, the glasses are changed. This happens again and again, so that by the time patients have become convinced of the advisability of consulting some other ophthalmologist it is not an unusual thing to have them present half a dozen pairs of glasses that have been prescribed for them in scarcely more than as many weeks. It is evident that there is no need for this changeableness and ophthalmologists are evidently trying to remove symptoms by means of spectacles that must be treated in other ways. There are certain nervous symptoms sometimes attributed to eye-strain which are not only not caused by refractive or other optical errors, but are not even contributed to by eye conditions at all.

Overtaxing the Eye.—Dr. Herman Knapp said that overtaxing the eye, especially when it is not in normally healthy condition, may easily produce reflex symptoms outside the eye, or pathological lesions within the eye. Headache from eyestrain is in this way not an unusual phenomenon and even hemorrhage into the retina may be due to overuse of the organ when the blood vessels are in weakened condition. Dr. Knapp recalled a very instructive case which he saw about thirty years ago. The patient admitted that he had been over-reading until finally partial loss of vision had occurred. The pathological condition present was hemorrhage into the retina. Careful inquiry into the patient's immediately previous history showed that he had stayed up most of the night before, as well as on several preceding nights, reading all about what he now called that "damn Beecher trial." Straining of the eyes will thus bring out the defects that might otherwise remain latent for a long period.

Asthenopia.—This may be, in Dr. Knapp's experience, of two kinds, simple or complicated. Simple asthenopia does not produce mental or nervous symptoms. The individuals simply get tired and then are no longer capable of using their eyes. This is due to a congenitally weak visual apparatus, which exists in about one-third of all persons seen. If asthenopia of low grade occurs in people of nervous organizations then their nervousness tempts them to use their eyes beyond the period of physiological fatigue and the consequence is headache and other reflexes.

Centers of Conception and Perception.—Dr. Knapp considers that with regard to the eyes and consequent backwardness in intellectual development the existence of separate centers for conception and perception should be remembered. Minds may be perfectly capable of translating perceptions into ideas and not conceive ideas in such a way as to connect them with others. A boy may not be able to get through the alphabet, yet may have quite a talent for mathematics. The memory center may be deficient and while in these cases of nervous defects in the brain there may also be defects in the ocular mechanism, the two conditions are by no means necessarily connected as cause and effect.

Dr. Gruening said that no ophthalmologist of any serious experience pretends to cure epilepsy or chorea, or any of the real nervous affection. The neurologists then in taking great pains to refute the possibility of such cures are really not attacking a favorite position of the ophthalmologist, but rather the corpse of certain ideas and hopes that overenthusiastic ophthalmology encouraged under mistaken impressions for a while, years ago. The whole of the evening's discussion then, in Dr. Gruening's mind, had been too much occupied with dead issues. There is no use in trying to compel those who deliberately exaggerate the supposed effects of ophthalmological treatment to adopt a more conservative position, since they are not willing to do so of themselves.

Hysterical Amaurosis.—The President, Dr. Andrew H. Smith, said that in certain cases of hysterical blindness there can be no question of malingering. In a case seen not long since the patient became suddenly blind after having had a quarrel with her husband. There was no question of feigning in the case, because she was the worst scared woman Dr. Smith had ever seen. She presented certain other stigmata of hysteria, which seemed to make it clear what the true condition was and a favorable prognosis was given. Total blindness lasted for 36 hours after which there was a gradual regaining of sight.

Migraine and Muscle Balance.—Dr. Smith said that in one case he had been taught the lesson of a possible connection and of the possibilities of therapeutic effects in muscular eye deficiencies and their correction. The patient suffered every three or four weeks from intense headache. Practically everything was tried without avail and recourse had to be had to morphine for relief from the pain. Gradually the dose of morphine had to be increased until it became evident that the patient, a comparatively young woman, was contracting the morphine habit. She suffered from a slight amount of internal strabismus. Dr. Smith had insisted on a number of occasions that she should have her eyes treated. She constantly refused. She could not be persuaded to go to an ophthalmologist. Finally, one day when Dr. Smith was called to see her because of the beginning of her usual attack of migraine, he brought an ophthalmologist with him and insisted that the operation be done at once. After some demurrer this was permitted. The strabismus was corrected. Since then there has not been a single attack of migraine nor any

symptom of it. Before the operation for strabismus, practically all the classical symptoms of true migraine were present. While then in most cases migraine is not relieved by operative procedures on the eye, it is evident that in some cases unexpected relief may follow from operations that would ordinarily not be deemed curative. Ophthalmologists must, therefore, always be called in consultation in such cases and whatever ocular defects exist must be corrected. At times the consultation will be rewarded by a cure as unexpected as it is welcome to the physician and grateful to the patient.

CHICAGO SURGICAL SOCIETY.

April Meeting.

Metapneumonic Empyema.—Dr. Arthur Dean Bevan, at the April meeting of this Society, showed a young man who gave a history of pneumonia, and a metapneumonic empyema. A rib had been resected, and an empyema of the left side drained eight months before by another surgeon, after which the opening closed. This was followed by a reaccumulation of the fluid, and when he saw the patient the entire left side of the chest was full of pus up to the clavicle, and the apex beat was in the middle line. He took an X-ray view of the case, which showed fairly well the condition. There was a small discharging fistula in the third intercostal space, two inches to the left of the sternum, and through this a probe could outline the entire cavity. The patient was septic, and in bad condition. A Schede operation was done. An extensive U-shaped incision was made, and the soft tissues lifted up. A resection was made from the third rib to the tenth inclusive. This was done subperiosteally. After lifting up a very large flap, and after the resection had been made, he took a powerful pair of scissors and cut away all of the intercostal tissues, including the pleura, which was three-quarters of an inch in thickness. This U-shaped flap was drawn down and a tube as large as the thumb introduced to the apex of the cavity, and the flap stitched in position. Some gauze was also packed in. The operation was done January 7. The patient had some sepsis for about ten days after the operation—in other words, the temperature continued. However, his condition gradually improved, and within about four weeks after the operation, he outlined the size of the cavity which remained, and it was done in this way: He injected iodoform emulsion into the cavity, sealed the opening, and took an X-ray picture. The skiagraph showed a cavity which reached almost to the clavicle, it being a fine, ribbon-like cavity. After he had outlined this cavity with the iodoform emulsion, he put the patient at work blowing up an air-bag. This was responsible for the complete cure which had taken place, and the obliteration of this long, ribbon-like cavity that extended to the apex. This was the seventh or eighth Schede operation he had done, and it was the most satisfactory one of the entire group.

Appendicitis with Perforation of the Duodenum.—Dr. D. W. Graham reported this case, in a patient, aged thirty-seven years, and after detailing the steps of the operation that had been performed, as well as mentioning the death of the patient on the tenth day following operation, at the autopsy the appendix measured 11 cm. in length and was found to pass directly upward behind the ascending colon, its free end being adherent to the psoas muscle and lying behind the curve of the duodenum and attached to it. Six centimeters from the pylorus and on a level with

and 3 cm. to the right of the biliary papilla was a perforation of the posterior duodenal wall 3 mm. in diameter. He presented a specimen showing the relation of the appendix to the colon, the abscess cavity and the duodenum.

Amebic Abscess of the Liver, with Complication.

—Dr. Graham also reported this case, and exhibited specimen. The patient was a man, thirty-seven years of age. The specimen showed (1) the large sloughing wound of the abdominal wall which had been preserved intact; (2) the adhesion of the liver to the colon, which represented the point where the abscess was partially evacuated through the colon wall before the operation; (3) the abscess cavity in the liver as large as a fist, notwithstanding the contraction that had taken place; (4) many small abscesses through the liver; (5) numerous ulcers in the mucosa of the colon, with sloughing undermined edges and intercommunicating by chanelns underneath the mucosa, having all the characteristic features of amebic ulceration.

X-ray of Cervical Rib.—Dr. D. N. Eisendrath showed a skiagraph from a patient, fifty-six years of age, who consulted him on account of recurrent hemorrhages apparently from the lungs. The skiagraph showed beautifully the cervical rib. As regards the origin of this cervical rib, the only way one could understand them was to consider them as a reversion of type of the mammalia toward some of the elementary forms. This cervical rib existed in reptiles. It must be regarded as an abnormal development of the anterior nucleus of the transverse process of the seventh cervical vertebra.

Adenoma of the Mucous Glands of the Lips as a Cause of Macrocheilia.

—Dr. D. N. Eisendrath reported this case. He said that this condition consisted in an enormous thickening of either the upper or lower lip, or both, and occurred especially in scrofulous children, was very apt to relapse, and often very chronic in character. Microscopically, it consisted of an hypertrophy of the mucous glands, with an increase of all of the tissues constituting the lip, the connective tissue, blood vessels, etc. It also occurred at times in syphilis. Operation was successful, with no recurrence of the disease since its performance.

Empyema.—Dr. A. E. Halstead reported the case of a child, eight years of age, who had an extensive empyema of two years' duration. He resorted to extensive resection of the ribs, except the second one. He found difficulty in getting the cavity closed under the scapula. There was a high cavity which extended away up to the second rib, and so far as he knew, as he had not seen the child for a month, this cavity was still open.

Results in Abdominal Wall Suture.—Dr. Charles Davison read a paper on this subject. Some time ago he proposed the fastening of a longitudinal silkworm-gut suture in the fascia of the abdominal wall by terminal bowknots, leaving the ends of the suture protruding from the wound; the knots to be untied by traction on the exposed ends and the suture removed at the completion of the process of healing. A complete series of 41 consecutive cases with sterile primary union was reported at that time. The aim of this simple manipulation was to obtain all of the advantages and security of close and accurate suture of the individual layers of the abdominal wall, without the danger of suppuration incident to the use of catgut, and its pulpification and absorption, and without the dangers of irritation and sinus following the use of any permanent buried suture. The

writer had used the tied longitudinal silkworm-gut suture in all clean laparotomies during the three years, 1901-2-3, with the following results: 178 cases with 7 infections or less than 4 per cent. of infections. Of these cases, 23 were emergencies, operated upon without previous preparation, with 4 cases showing infection, all limited to the subcutaneous fat. The remaining 150 cases had hospital preparation previous to the operation, with 3 cases of infection, or less than two per cent. of suppuration in the prepared cases. Of the writer's 178 cases of removable silkworm-gut suture, 131 had been followed up to the time of the preparation of this report. One case of spontaneous epigastric hernia operated upon by Mayo's method had a recurrence of hernia two inches from the old line of incision five months after operation; three-fourths of one per cent. of postoperative ventral hernias.

Dr. A. J. Ochsner said there were three elements which must be considered in the closure of abdominal wounds. First, accurate coaptation; second, an aseptic wound, and third, the absence of pressure necrosis. If these three conditions were carried out, it did not make much difference what suture material was used, or what particular method one employed, he would not get postoperative hernia. Last year he had approximately 740 abdominal sections, and of this number he did not think there would be a ventral hernia in which the three principles referred to were carried out.

Dr. D. N. Eisendrath had seen the method of Dr. Davison used very satisfactorily.

Dr. Wm. M. Harsha said he had used Dr. Davison's suture method in probably twenty or more cases. There had been no hernia in any of the cases he had been able to follow up; but the skin cicatrix had spread in some cases. He had had no case of infection. By this method it made the neatest and nicest scar when one removed the sutures.

Dr. C. C. Rogers had used the Davison suture in 18 cases, 5 of them being emergency cases, the others hospital cases, with one case of infection. In 13 there had been no hernia; the others he had not seen or heard of recently.

Dr. Carl Wagner had used the longitudinal wire suture in several cases, but had abandoned it on account of the wound in two cases having opened. He thought the wire was too stiff. Silkworm gut was preferable, for the reason that it was much smoother and more elastic.

Dr. E. Wyllis Andrews said that one virtue of the longitudinal silkworm-gut stitch lay in the fact that it was semi-rigid and semi-flexible, becoming molded to the tissues and not stretching.

BOOK REVIEWS.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION FOR THE YEAR 1903, Volume 19. Printed for the Association, Philadelphia.

The present volume of transactions of the American Climatological Association contains some interesting data with regard to the influence of altitude upon heart disease, by R. H. Babcock, M.D., and some notes on the relation of neuralgia to altitude, by F. Savary Pearce, M.D. The subject of tuberculosis and its treatment by change of climate, with special reference to the open-air treatment, is discussed in a suggestive series of papers. An interesting article with regard to consumption is the susceptibility of the negro to tuberculosis, by Thomas D. Coleman, M.D., of Augusta, Georgia.

Another series of papers has for subjects complications of pneumonia, the treatment of pneumonia, thiolol in the treatment of pneumonia and the death-rate of acute pneumonia. On the whole the volume is of a practical character and all those who are interested, especially in respiratory diseases, will find much suggestive material in it.

PEDIATRICS (The Medical Epitome Series). A Manual for Students and Practitioners. By HENRY ENOS TULEY, A.B., M.D., Professor of Obstetrics in the Medical Department of Kentucky University. Lea Brothers & Co., Philadelphia and New York.

THIS series of medical epitomes deservedly enjoys a high reputation. The present volume contains an excellent summary of the most recent progress of our knowledge of children's diseases. It is small enough to be carried around in the pocket for purposes of consultation and yet complete enough to be helpful even to the experienced practitioners, and it contains a number of formulæ for infant feeding and data with regard to the development of children that cannot well be carried in the memory, yet must be at hand at certain times. While originally intended for students, the book would undoubtedly be of great service to practitioners whose duties give them much to do with ailing children.

SYSTEM OF PHYSIOLOGIC THERAPEUTICS. Volume 7, Mechano-therapy and Physical Education, including Massage and Exercise, by JOHN K. MITCHELL, M.D., and Physiology of Manual Exercise, by LUTHER HALSEY GULICK, M.D. P. Blakiston's Son & Co., Philadelphia.

THIS masterly series is now drawing to a close. Practically all the projected volumes have been published and we congratulate the editor, authors and publishers alike on giving the profession so valuable a series of manuals.

The present volume, we believe, should be available to every medical man. Too frequently are the procedures here outlined left to the osteopath and the "quack." It is a great privilege to have in a well-illustrated form a manual dealing so completely with the form of muscular exercise.

A very useful chapter on Corrective Manipulation and Orthopedic Surgery is given by Dr. James K. Young, and Dr. Walter Pyle adds a useful chapter on Physiological Methods in Ophthalmic Therapeutics.

THE THERAPEUTICS OF MINERAL SPRINGS AND CLIMATES. By I. BURNLEY YEO, Professor of Practice of Medicine in King's College, London. W. T. Keener & Co., Chicago.

FROM the standpoint of the practitioner of ample practice among a favored clientele the subject of health resorts is one of much importance. By reason of the lack of efficient presentation in numerous text-books, he makes it a point to spend his leisure in taking short trips to various health resorts and thus obtains a first-hand knowledge, which is of undoubted service to his patients.

YEO has evidently done this and has further taken the pains to write it all out, as it were, putting down his impressions as he went along, and later revision and editing has given us this practical and very useful manual. It is thoroughly reliable and full and an exceedingly serviceable volume, particularly for European health resorts.

A MANUAL OF ELECTRO-STATIC MODES OF APPLICATION, THERAPEUTICS, RADIOGRAPHY AND RADIOTHERAPY.

Second Edition. By WILLIAM BENHAM SNOW. A. L. Chatterton, New York.

THIS second edition is an amplification of the first. We can add that for the beginner the volume is an extremely useful one. The writer's optimism is in need of some measure of corrective, but we believe that thoroughgoing optimism in therapeutics, even if dangerously near the border of charlatanry, is necessary in many therapeutic procedures.

IMMUNE SERA. Hemolysins, Cytotoxins and Precipitins. By Prof. A. WASSERMANN. Authorized translation by Boldnan. John Wiley & Sons, New York.

THIS is a fragment, but a very useful one, of lectures given by Wassermann on topics outlined by the title. There is little in the small volume of seventy-five pages not in more extended volumes, and it is assumed by the writer than much is known by the reader—but, on the whole, a serviceable fragment.

BOOKS RECEIVED.

The MEDICAL NEWS acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the MEDICAL NEWS will shortly appear:

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Volume I.

NOTES ON MALIGNANT GROWTHS IN THE INSANE. By Dr. J. R. Knapp. Illustrated.

MODERN OPHTHALMOLOGY. By Dr. Jas. M. Ball. 8vo, 820 pages. Illustrated. F. A. Davis Co., Philadelphia.

THE PERSONALITY OF THE PHYSICIAN. By Dr. A. T. Schofield. 8vo, 317 pages. P. Blakiston's Son & Co., Philadelphia.

A MANUAL OF FEVER NURSING. By Dr. R. W. Wilcox. 12mo, 236 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

ORGANES GENITO-URINAIRES DE L'HOMME. By Dr. Henri Hartmann. Quarto, 432 pages. Illustrated. G. Steinheil, Paris.

TRANSACTIONS OF THE ROCKY MOUNTAIN INTERSTATE MEDICAL ASSOCIATION. 1903. 8vo. Illustrated. Salt Lake City, Utah.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY, 1903. Edited by Dr. Walter Lester Cart. 8vo, 234 pages. Illustrated.

THE THERAPEUTICS OF MINERAL SPRINGS AND CLIMATES. By Dr. J. B. Yeo. 8vo, 760 pages. W. T. Keener & Co., Chicago.

THE OPHTHALMIC YEAR-BOOK, 1903. By Dr. Edward Jackson. 8vo, 260 pages. Illustrated. Herrick Book & Stationary Co., Denver.

FIRST REPORT OF THE TENEMENT HOUSE DEPARTMENT OF THE CITY OF NEW YORK, 1902-1903. Two volumes. 8vo. Illustrated. New York.

THE CLINICAL STUDY OF BLOOD PRESSURE. By Dr. T. C. Janeway. 8vo, 300 pages. Illustrated. D. Appleton & Co., New York and London.

SEVENTEENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF OHIO, 1902. 8vo, 508 pages. Springfield Publishing Co., Springfield, Ohio.

ATLAS UND GRUNDRISSE DER LEHRE VON DEN AUGENOPERATIONEN. By Dr. O. Haab. 12mo, 303 pages. Illustrated. J. F. Lehmann, Munich.

THE MEANING OF A MODERN HOSPITAL. By Dr. W. Bruce Clarke. 8vo, 47 pages. Longmans, Green & Co., London, New York and Bombay.